AP/ADMS 2511 - Management Information Systems – Practice Midterm
Covering Sessions 1 to 5, Effective date: April 24, 2015

Answer Guide

Note that in general answers must be long enough to express a clear point (i.e. one word or very brief answers are not acceptable)

Question 1 (Shopify)

A. What is business process management? (1 mark)

Section 2.2, p. 40

-A management technique that includes methods and tools to support the design, analysis, implementation, management, and optimization, of business processes (such as producing a product or service of value to the organization.)

-an example that illustrates the components of the definition is also acceptable.

B. Why could business process management be important to a development and hosting company like Shopify that has 300 employees? (2 marks)

Section 2.2, p. 39-41

-Business process management can lead to competitive advantages if they enable Shopify to innovate and execute web site storefront creation and maintenance better than its competitors.
- The following are areas of competitive performance that Shopify can create a competitive advantage over its competitors (also called outcome measures in the text):
• Customer satisfaction with its ability to provide quick changes to customer websites and offer value for its services.
• Cost reduction and good value for customers who want to post their products.
• Provide quality product for its clients (serviceable, useful, presentable website) that provides Shopify's clients with a significant Internet presence with which to build and sustain their business.
• Shopify can provide a unique business product and service (websites with unlimited service and many product postings) that differentiates Shopify from its competitors
-it helps companies like Shopify improve profitability by decreasing costs and increasing revenues
-can create a competitive advantage by improving organizational flexibility (Shopify could respond to the competition and have an easier to use site)
-the examples above illustrate cost benefits and increases in customer satisfaction
-other valid examples are acceptable

C. Provide three (3) examples of IT (information technology) infrastructure components that could be present at the above companies. For each component, provide an example that could pertain to either Shopify or Friggle Furniture. (6 marks)

Section 1.2, p. 14 and see Fig 1.4

[Note, using Figure 1.4, there are ten possible types of infrastructure components that can be given, as shown in the left hand column. Any example provided in the right column must match the component to be awarded a grade.]

Provide three examples of IT infrastructure components	For each component, provide an example that could pertain to either Shopify or Friggle Furniture
IT COMPONENTS (PLATFORM)-Wireless Communications -Telecommunications and Networks -Software -Hardware	Friggle: Host or support online storefront using Web Server (hardware). Friggle: Web software required to create its website and webpages (software)
IT Personnel	Server Admins can ensure the webserver operating properly and kept up to date with latest security patches. -many possible examples of what IT personnel could do from this chapter
IT SERVICES-System Development -Managing Security & Risk -Data Management	-Ensure Shopify is consistently updating and patching its systems to reduce security risks.
Others: Workstations, modems, routers, firewalls, communication coaxial cabling, fiber optics cabling, satellite communication, and most other hardware or software that could be used for the Friggle or Shopify companies as long as they are linked to IT Components or IT Services	EXCLUSIONS: Application software or any functional-related systems that are unique to organizational/user systems do not apply. Needs to be hardware or software that relates to the database, operating systems, communications or other that provide support.

D. For each of the three different types of cloud computing, provide an example of how Shopify and FF could use the cloud. (6 marks) Use the following table to record your answer. Note that each example must be different.

Session 4 Slides and TG 3.6 p. 424-426

Examples of how Shopify could use the cloud for:	Examples of how FF could use the cloud for:
IaaS (Infrastructure-as-a-Service)	
-all data communications could be handled using a service provider	-it's web site could be located on an Internet Service Provider's server
PaaS (Platform-as-a-Service)	
-midrange computer services to the operating system level are outsourced	-FF uses outsourcing to run its Windows services
SaaS (Software-as-a=Service)	
-Shopify's accounting systems are outsourced to an application service provider (e.g. payroll processing)	-FF's point-of-sale systems are handled via an applications service provider, i.e. outsourced

E. For each of the following concepts, define the concept and provide an example of each for a store like Friggle Furniture (FF). (6 marks)

Section 1.2 p. 12

Define the following concept	Provide an example for FF
Data An elementary description of things, events, activities, and transactions that are recorded, classified, and stored but not organized to convey any specific meaning.	(Numbers, letters, figures, sounds, or images. Specific example needed to obtain a grade, such as noted below:) -Number of futons sold (10,23,15) -Colours of futons (blue, green, red)
Information Refers to data that has been organized so that it conveys meaning and value to the recipient.	-Average number of futons sold per week -List of top ten best selling futons -Slideshow of furniture images.
Knowledge Consists of data and information that has been organized to convey understanding, experience, expertise, and accumulated learning as they apply to the current problem.	-Experience of orienting styles to men or women -Knowledge of seasonal sales cycles (i.e. back-to-school)

F. For each of the following wireline communications channels provide an advantage of its use to either Shopify or to its customers such as Friggle Furniture. (3 marks)

Section 4.2, p. 107-109

F.1 Fibre-optic cable Advantages:
Difficult to tap, hence improved security of transmission
Very high bandwidth for high speed communications
Relatively inexpensive.

F.2 Co-axial cable Advantages:
Higher bandwidth than twisted pair
Less susceptible to electromagnetic interference

F.3 Twisted pair wire Advantages:
Least expensive to install & use
Widely available
Easy to work with /use
Unobtrusive, i.e. not noticeable

G. For each of the following terms, describe it, and explain how it pertains to Shopify or its employees. (4 marks) Use the following table to record your answer

Section TG1.6, p. 401, 403; TG2.1, p. 410; TG2.2, p. 412

Describe the following terms	Explain how it pertains to Shopify or its employees
Cache memory: high-speed memory that enables the computer to temporarily store blocks of data that are used often	-improve application (whether server or client) performance by ensuring that frequently used data, or sections of application programs are retained in main memory
Magnetic disks (also called hard drives or fixed disk drives): most commonly used storage devices: read from and write to stacks of rotating magnetic disk platters mounted in rigid enclosures	-used to provide low-cost storage of data and programs -provide a low-cost way of gradually increasing the data storage capacity of the organization
Systems software: instructions that serve as an intermediary between computer hardware and application programs -enables computer systems to perform self-regulatory functions by loading themselves when the computer is first turned on and providing commonly used sets of instructions for all applications	-employees would use Windows or other systems software to manage their computers -Shopify would use systems software to manage its networks
Open-source software: source code is publicly available at no charge	-Shopify could use open source software on its servers to manage the servers or

-produced by worldwide communities of developers who write and maintain the code	within other parts of its systems -Shopify could create open source modules that function with its paid systems to help promote the use of its systems

Question 2 (Presto Card)

A. Provide three reasons IT (Information Technology) governance is important for managing big projects like the Presto card implementation. (3 marks)

Section 2.5, p. 55

- The purpose of IT Governance is to provide effective oversight (for example, having effective controls in place) over the use of technology i.e. management directives are aligned with organizational objectives
- Balance risk versus return with respect to IT investment i.e. security versus cost of operations
- Ensure value for IT investment dollar i.e. systems are for valid business purposes, project costs are justified and reviewed.
- Help make sure that the project is completed on time and on budget
- Provide approval of money spent for enhancements and to make sure that enhancements are appropriate.

B. Is the Presto Card system an SIS (strategic information system) for GO Transit? Provide two reasons to justify your response. (2 marks)

Section 2.4, p. 49

Definition (no marks) SIS provide a competitive advantage by helping an organization implement its strategic goals and increase its performance and productivity.

-The Presto system is an SIS as it helps improve productivity of the fare payment system at GO.
-A system of many payment options, all of which were administered by GO have been reduced to three payment options, reducing administration times.
-The Presto card also automatically handles volume purchase discounting further reducing GO's administrative overhead.
-GO's boarding process is likely improved as less time is spent actually buying/selling tickets to individual passengers, so buses and trains are more likely to leave and arrive on time.

C. Provide three examples of consultative functions that the information systems department of GO Transit could provide to the company's employees. (3 marks)

Section 1.2, p. 10

-Initiating and designing strategic information systems
-Incorporating the Internet and e-commerce into the business
-Managing system integration
-Educating non-IS managers about IT
-Educating IS staff about the business
-Supporting end-user computing
-Partnering with executives
-Managing outsourcing
-Innovate by providing new uses, such as the Presto system
-Ally with vendors and IS departments in other organizations

Reasonable consultation examples of the IT department would be acceptable, although the focus should be the table listed on the above page.

D. Analyze the threat of substitute products or services for the Presto card from the perspective of Accenture, its developer and system operator. Use Porter's Competitive Forces Model. (3 marks)

Section 2.4, p. 51 [Note that students are not expected to know the names of competitors]

{It is important that the threat be analyzed rather than simply listing possible substitutes, which would not be awarded marks. Cash, debit cards and credit cards are not substitutes as they do not provide the ability of GO Transit to provide multiple fare levels. Two plausible substitutes that could be discussed are mobile apps or other smart cards.]

<u>For the Presto card itself, threat of substitution is low insofar as:</u>
-Switching costs for GO Transit (Metrolinx, really) would be very high to remove Presto in favor of another stored value-card system, e.g. HKMTR's Octopus card.
-Switching costs would include acquiring the new system, decommissioning Presto, and maintaining a common historical data repository for both.
- If only GO Transit switched, it would throw away the positive network effects of riders being able to use the same fare card across multiple transit systems.

-It is not in transit systems' interest to offer more payment systems as substitutes to Presto, since it simply raises costs without a clear positive impact on ridership.
-So the substitution of Presto by credit or debit cards directly at the fare box seems unlikely.

-Private transportation appears to be becoming an increasingly less attractive alternative in the Go Transit operating area, hence a less than like substitute for public transit directly and, therefore, indirectly, Presto.

It could also be argued that the threat of substitution of the Presto card is high since:
- mCommerce payments for transit are popular in Japan and South Korea, and similar approaches could be adopted in Canada.

For the on-going operation of the system, threat of substitution is low insofar as:
-while there are many credible providers of systems services, e.g. CGI, IBM, they would not have the expertise with the system that Accenture has developed.
-To develop to the same level would require costs that would eventually be passed back to the customer, diminishing the attractiveness of switching.
-Switching costs would also crop up in the form of potentially reduced systems performance, at least in the short term after a substitution of service providers.

It could also be argued (again, not terribly convincingly) that threat of substitution is high since:
-there are many credible providers of systems services, not the least of which is Metrolinx itself, which could build the expertise in-house.
-Alternatively, offshore-headquartered providers, e.g. TCS, Infosys, Wipro, might be able to offer a cost structure favourable to the likes of Accenture.

E. Consider that you might purchase a Presto Payment Card and add money to the Payment Card using your credit card. Explain the following terms and provide an example of the type of data about you that might be stored on the customer relational database table: (6 marks)

Section 3.2, p. 73-74

Explain the following term	Provide an example of the type of data about you that might be stored
Primary key Attribute that uniquely identifies the customer	Presto Account Username; Presto Card Number Note that Customer SIN is NOT collected to support the Federal Tax credit for public transportation use in this case, so the eligible examples are about all that can be used.
Secondary key Identifying information, but not necessarily unique	Credit Card Number(s), Customer Name, Customer Phone Number, Customer e-Mail Address, Customer Street Address [Other items are possible to allow for grouping for data analysis (ex. City/Gender)]
Entity Person, place, thing about which information is maintained	The entire set of data collected to describe the customer.

F. Provide two advantages to Accenture of organizing Presto card data using a relational database management system rather than using traditional sequential files. (3 marks)

Section 3.2, p. 72, Sec 3.3, p. 76-77

Any two of:

1. Increased Data Security, provided through the RDMS (relational DBMS)
2. Increased Data Integrity, through constraints cataloged in the table definition, e.g. only digits allowed in phone #, requirement that a transaction is completely committed to the database where multiple writes/updates are involved. Also, integrity provided through backup facilities.
3. Increased Data Independence, data in RDMS accessible to multiple applications
4. Reduced Redundancy since data is stored in one place
5. Reduced Isolation, flip side of Data Independence—any application can access the RDMS
6. Reduced Inconsistency, since multiple copies of data are not required
7. Structured Query Language- faster searching compared to sequential files.

G. Describe four examples of difficulties that Accenture could experience in managing the customer data associated with the Presto card. (4 marks)

Section 3.1, p. 69-70

Examples may vary. Any four of:

1. Data increases exponentially over time: as customers are added and each one generates payment, customer service, and trip transactions.
2. Data scattered throughout the organization: data are collected from the Presto card website while also being collected from all the participating transit agencies (which makes it harder to manage security).
3. Data comes from multiple sources: at a minimum, sources include: web site, GO Ticket Agencies/Customer Service Outlets (e.g. York University's own InkBlotz), GO Stations, participating transit system terminals and stations.
4. New sources of data are being developed: in addition to websites and RFID card readers, potential to extend Presto transactions to mobile phones as well (which makes it difficult to maintain quality).
5. Data Degrade over time: as customers move or change phone #'s without updating their Presto Account profile.
6. Data rot: archived data may be subject to loss as storage media degrades.
7. Data errors: possibility of corrupt/omitted data in trip data feeds from participating transit systems.
8. Poor security over data could lead to
   (1) data quality/integrity problems or

(2) legal liability with respect to PIPEDA or other laws.

9. Difficulty in clarifying the responsibilities with respect to data management between Accenture and GO Transit (e.g. who updates what)

H. For each of the following, describe the term and explain how GO Transit could use it. (4 marks)

Section 4.3 p, 113

Describe the term	Explain how GO Transit could use it *Many examples possible:*
Intranet -Network to internally share information -Network designed to serve the internal informational needs of a single organization, i.e. intended for use by authorized organizational members, e.g. employees, franchisees, associate dealers. -intranet can be big or small spanning short or large distances [no marks for this statement]	Internal training, corporate news, standard purchase requests, employee HR processes, e.g. vacation requests, display KPI achievement to employees, …
Extranet Network connecting parts of Intranets of more than one organization, e.g. suppliers and customers, across the Internet (may be implemented using VPN)	-Links to suppliers to show demands for vehicle consumables and/or train crews; - links to Accenture for common view of Presto card system performance metrics; -links to participating transit systems to provide a common view of interface audit trails and exception queues …