UNIVERSITI SAINS MALAYSIA
Master of Business Administration

First Semester Examination
Academic Session 1995/96

October/November 1995

AGW604 - MANAGEMENT INFORMATION SYSTEM

Time : [3 hours]

INSTRUCTIONS:
Please make sure that this examination paper consists of **FIVE (5)** printed pages before you begin.

There are three sections to this examination questions. Section A is compulsory, answer two (2) from section B and one (1) from section C.

SECTION A

1. Answer True or False for the following statements. Write T (True) or F (False) in the blanks provided and detach the first three pages of this examination questions, write your index number at the top right hand corners and attach them to your answer script. Marks will be deducted for wrong answers.

a. ____ Organizations often have different information systems for the same functional areas.

b. ____ Compared to early systems, today's information systems play a greater strategic role in the life of the firm.

c. ____ Transaction processing systems (TPS) are major sources of information for other systems in the organization.

d. ____ Strategic information systems focus only on the organization's external markets.

e. ____ A strategic information system can provide a barrier to market entry by raising the costs of entry.

f. ____ In the model which divides explanations on why systems are build into environmental and institutional factors, rising cost of labor is considered an environmental factor.

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g. ____ Research has shown that the impact of information systems has been to promote organizational centralization and to shrink the size of middle management.

h. ____ The bureaucratic model of decision making suggests that senior management cannot decide to act in ways which the organization's major sub-units cannot support.

i. ____ Cooperative processing is the process of transferring applications from large computers (such as mainframes) to smaller ones (such as microcomputers).

j. ____ A compiler translates each source code statement one at a time into machine code and immediately executes it.

k. ____ Data redundancy can occur using a DBMS.

l. ____ Asynchronous transmission transmits one character at a time over a channel.

m. ____ Application portability is the ability to move software from one generation of hardware to another more powerful generation.

n. ____ Models for computer communications such as OSI and TCP/IP divide the telecommunications process into a series of logical layers which deal with a specific aspect of the communications process.

o. ____ Business process redesign is also called rationalization of organizational procedures.

p. ____ Prototyping allows users to actually work with a system to determine exactly what their requirements of the system are.

q. ____ To increase the quality of its programs IS professionals now believe they must shift more resources away from focusing on analysis and design and put more resources into programming where most of the bugs appear.

r. ____ One characteristic of knowledge work systems is that they incorporate more links to external data and information.

s. ____ Voting and prioritizing tools are used within a GDSS to allow the planned attendees to determine the agenda of the coming meeting.

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t. ____ All of the intelligence exhibited by computer systems must be provided by a human source.

[20 marks]

SECTION B
Answer any TWO (2) questions.

2a. Define the competitive forces model for identifying opportunities for strategic system. What are the 4 basic company strategies and how can information system helps firms pursue each of the strategies.

b. Microeconomic Theory, Transaction Cost Theory and Agency Theory are 3 economic theories used to help explain how Information System affects organization. Briefly describe each of these theories and their limitation.

[20 marks]

3a. Describe briefly, multiprogramming, time sharing, virtual storage and multiprocessing. Why are they important to the operations of an Information System?

b. What is a distributed database and how does it differ from distributed data processing.

c. Telecommunications systems may be categorised by their topology, geographic scope and value added. Describe briefly each of them.

[20 marks]

4a. In developing an Information System we need to determine Information requirements. What are information requirements and why are they difficult to determine?

b. List the main criteria we should use for evaluating an application software package.

[20 marks]

5a. Why are computer systems more vulnerable than manual system to destruction, fraud, error and misuse? List some of the key areas where system are most vulnerable.

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b. Some companies take elaborate precautions for backing up their computer systems. Why is this essential? What considerations must be addressed by a backup plan?

[20 marks]

SECTION C.

6. For the case given in the appendix, answer the following.

a. Use the competitive forces and value chain models to analyse Citicorp's situation. What competitive forces did Citicorp have to deal with? What kinds of strategic information systems did Citicorp use?

b. How sustainable was Citicorp's strategic advantage? Why?

c. What management, organisation, and technology factors contributed to Citicorp's problems?

d. If you were a Citicorp manager, what solutions would you recommend? Would you suggest new information system applications?

[40 marks]

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What Happened to Citicorp?

During the 1970s Citicorp rose to Number 1 rank in retail banking, pioneering in information technology innovations such as ATM machines. Citi was often cited as a shining example of a company that used information systems strategically to create a competitive edge. It appeared that Citi could do no wrong.

Twenty years later, Citicorp found itself with large losses, strapped by bad loans and massive layoffs. Its status had dropped to the second tier in the global banking market. It had to cut back on innovations and consolidate some of its systems and networks. What happened?

The bank had embarked on an ambitious program to decentralize its information systems, hoping to speed up the development of new products and services by giving its business units the responsibility for developing their own systems.

Citi became crippled by non-performing Third World and commercial real estate loans made during the 1980s. These bad loans continued to mount. In the fall of 1992, 7 percent of Citicorp's loans were reported as either delinquent or so troubled that full repayment was unlikely, giving Citicorp the eighth-worst record among the 50 largest U.S. banking firms. The delinquency rate on Citicorp's mortgage loans was four times the national average.

Federal bank examiners criticized Citicorp for sloppy mortgage lending practices that did not properly identify risky loans and that overcharged many customers who relied on Citibank to keep track of monthly payments on their mortgages. Citibank was said to have incorrectly calculated the amount of customers' money accumulated in escrow accounts for real estate taxes and insurance. A total of $1.1 billion of its mortgage loans were more than 360 days delinquent but had not been identified as foreclosed.

Citi launched a $1.5 billion cost reduction campaign and tried to improve its financial position by unloading assets. It sold 50 percent of its Ambac—its municipal bond insurer—for $330 million and sold $1.25 billion of convertible preferred stock. It also had to cut costs by scaling back or cutting out pet projects such as Quotron Systems Inc. and Citicorp POS Services Inc. These projects had been designed to put Citi in the "information business."

At its height, Citicorp was jokingly described as a software company masquerading as a bank. It had over 150 computing centers, over 100 different telecommunications networks, and 4000 program developers. Many of these were cut back and consolidated to reduce costs. In 1991, Chairman John Reed announced $1.5 billion in cost reductions over the next two years, including a reduction in jobs from 95,000 to 86,000.

In the 1970s Citi had purchased Transaction Technology Inc. to develop the hardware and software for its pioneering ATM systems. These were an instant success. Citi's push into consumer banking added to Citi's revenue because more customers did more transactions with the bank. While competitors installed ATMs primarily to reduce costs, Citi used ATMs to attract more customers. An average of 75 percent of Citi's customers prefer the ATM machines to human tellers, compared to 43 percent at other banks.

As new ATM systems such as Mastercard Inc.'s Cirrus rose to compete with Citi, Citicorp refused to interconnect with them. Customers then began flocking to other banks because Cirrus and similar networks allowed them to do their banking at virtually any ATM instead of having to search for a Citibank outlet. Citi eventually joined Cirrus because it wanted global availability of customer access to ATMs for cash. But the damage was done. Citi's ATMs, which originally were leading-edge, could no longer keep up with its rivals' systems.

The early success of Citi's ATMs convinced top management of the power of business units to create their own technological innovations. Top management began to promote decentralization, believing this would encourage entrepreneurship and more strategic use of technology. It initiated Project Paradise, which showered bank managers with billions of dollars to develop the systems they wanted. No thought was given to compatibility.

But the bank was so successful that it did not recognize the systems redundancies created by Project Paradise until the mid-1980s. By then it realized that many of its systems weren't necessarily helping the customer but were merely internal bureaucratic activities.

Many consider Reed's worst strategic blunder to be Citi's 1984 purchase of Quotron for $680 million. Quotron was the market-leading computerized stock-quotation system, with 100,000 stock quotation terminals in brokerage firms. Then competing stock quotation systems started to flourish. Automatic Data Processing bought Bunker Ramo, a Quotron competitor, and expanded its computer services to brokerages. Reuters Holdings Plc. began selling quotation data on its terminals. The bulk of Quotron customers were financial services firms that did not feel comfortable buying products from Citi, which they viewed as a competitor. Quotron fell to the Number 2 position in stock quotation data, with only 60,000 terminals, while ADP grew to 70,000 terminals.

Shortly after acquiring Quotron, Citi launched Reward America, a point-of-sale business that tried to create new products and services for the retail and travel industries by capturing market data at the cash register. This project was a good idea in theory, but it turned out to be impractical. Gathering data every time the cash register rings was not practical because the data were at the individual store level. Firms such as Coca-Cola are typically not interested in one store but in the entire Boston market, for example. Reward America was shelved in 1990, and its management was folded into Citi's card businesses. Several hundred POS employees still gather shopper data from stores for direct marketing.

Hoping to reduce costs and reassert management control, Citi is consolidating its computer centers and networks. It hopes to save $100 million annually by consolidating its 100 plus networks into a single Global Information Network. Citi does not want to eliminate local flexibility altogether. It hopes that when one of its local business units comes up with a new product, its simplified architecture will help it make "success transfers" more rapid than before. But eliminating redundancies is not easy, compared to superficial cost-cutting; it entails major cultural changes.