

SUGGESTED SOLUTIONS

07204 – Information Management

Certificate in Accounting and Business II Examination September 2012

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PART A

Answer No. 01

a) The best way to understand the current situation is to carry out a SWOT analysis. Identify the Strengths, Weaknesses, Opportunities and Threats this company is facing in order to develop business strategies.

 Has stand alone systems Old application software Obsolete or No Accounting system and inventory control systems Staff lacking in IT skills Staff lacking in marketing skills
Threats
 Heavy competition in the Music Instrument industry Some other music instrument sellers have gone online and using eBusiness Music instrument importers coming in to the market

(2)

b) After the SWOT analysis, the company has to see the feasibility of introducing an information system for this organisation. Briefly describe four (4) aspects of determining whether it is feasible to go ahead with an automated system.

i **Operational Feasibility**

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.

ii Economic Feasibility

Economic analysis is the most frequently used method for evaluating the effectiveness of a new system. More commonly known as cost/benefit analysis, the procedure is to determine the benefits and savings that are expected from a candidate system and compare them with costs. If benefits outweigh costs, then the decision is made to design and implement the system.

iii Technical Feasibility

The assessment is based on an outline design of system requirements in terms of Input, Processes, Output, Fields, Programs, and Procedures. This can be quantified in terms of volumes of data, trends, frequency of updating, etc. in order to estimate whether the new system will perform adequately or not. Technological feasibility is carried out to determine whether the company has the capability, in terms of software, hardware, personnel and expertise, to handle the completion of the project.

iv Human Factor Feasibility

This is one of the most important factors of a successful system implementation. It includes end-users and managers of the system. The systems development is not successful if the end-users don't accept it. The degree of resistance to the proposed system, the perceived role of the end-users in the development process and the current state of human resources available to conduct the project and to manage it are measured under this category.

(4 marks)

- c) After the feasibility study, If they decide to go ahead with the internal development of software, out of the approaches they can consider, briefly describe four (4) 'software development process models'. (Drawing models is not necessary)
- Waterfall Model



The Waterfall model is a sequential development approach, in which development is seen as flowing steadily downwards (like a waterfall) through the phases of requirements analysis, design, implementation, testing (validation), integration, and maintenance.

• Prototyping Model



Software prototyping, is the development approach of activities during software development, the creation of prototypes, i.e., incomplete versions of the software program being developed. The basic principles are:

- Attempts to reduce inherent project risk by breaking a project into smaller segments and providing more ease-of-change during the development process.
- User is involved throughout the development process, which increases the likelihood of user acceptance of the final implementation.

• Spiral Model

The spiral model is a software development process combining elements of both design and prototyping-in-stages, in an effort to combine advantages of top-down and bottom-up concepts. It is a meta-model, a model that can be used by other models.

The basic principle is:

Focus is on risk assessment and on minimizing project risk by breaking a project into smaller segments.

Rapid Application Development Model

Rapid application development (RAD) is a software development methodology, which involves iterative development and the construction of prototypes.

Key objective is for fast development and delivery of a high quality system at a relatively low investment cost.

Aims to produce high quality systems quickly, primarily via iterative Prototyping (at any stage of development), active user involvement, and computerized development tools. These tools may include Graphical User Interface (GUI) builders, Computer Aided Software Engineering (CASE) tools, Database Management Systems (DBMS), fourth-generation programming languages, code generators, and object-oriented techniques.

• End User development model

End user development model is used to develop the Information systems by end-users with little or no formal assistance from technical specialists.

Advantages of end-user development

- Faster design and implementation cycle
- More acceptable to users
- Reduces communications problems between users and information systems
- Encourages innovation and creative solutions

• Agile Process

Agile software development is a group of software development methods based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams. It promotes adaptive planning, evolutionary development and delivery, a time-boxed iterative approach, and encourages rapid and flexible response to change.

• Incremental development

Incremental development is at the heart of a cyclic software development process developed in response to the weaknesses of the waterfall model. It starts with an initial planning and ends with deployment with the cyclic interactions in between.

Iterative and incremental development are essential parts of the Rational Unified Process, Extreme Programming and generally the various agile software development frame works.

(8 marks)

a) There are many eBusiness Models that are used to enhance business online. This business is considering the following models to go online. Briefly describe the following eBusiness Models and select the most suitable model for the company "Sangeeth" for their business.

i. Brokerage Model

Brokers are market-makers: they bring buyers and sellers together and facilitate transactions. Brokers play a frequent role in business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. Usually a broker charges a fee or commission for each transaction it enables. The formula for fees can vary.

ii. Advertising Model

The web advertising model is an extension of the traditional media broadcast model. The broadcaster, in this case, a web site, provides content (usually, but not necessarily, for free) and services (like email, IM, blogs) mixed with advertising messages in the form of banner ads. The banner ads may be the major or sole source of revenue for the broadcaster. The broadcaster may be a content creator or a distributor of content created elsewhere. The advertising model works best when the volume of viewer traffic is large or highly specialized.

iii. Merchant Model

Wholesalers and retailers of goods and services. Sales may be made based on list prices or through auction.

• Most suitable model would be a Merchant Mode

(7 marks)

b) "Sangeeth" has to develop an Information System in order to manage their growing branch network and global expansions. They have to follow a formal Information System Development Process. Briefly describe the phases that the company has to go through in the systems development.

Information System Development Process is the process of developing information systems through investigation, analysis, design, implementation, and maintenance. It represents a systems approach to problem solving.

1. Investigation :

[Includes Initial Idea + Feasibility study stages]

The objective of phase1 is to conduct a preliminary analysis, propose alternative solutions, describe costs and benefits and submit a preliminary plan with recommendations.

Conduct the preliminary analysis: in this step, you need to find out the organization's objectives and the nature and scope of the problem under study. Even if a problem refers only to a small segment of the organization itself then you need to find out what the objectives of the organization itself are. Then you need to see how the problem being studied fits in with them. Propose alternative solutions: In digging into the organization's objectives and specific problems, you may have already covered some solutions. Alternate proposals may come from interviewing employees, clients, suppliers, and/or consultants. You can also study what competitors are doing. With this data, you will have three choices: leave the system as is, improve it, or develop a new system. Describe the costs and benefits and conduct a feasibility study to see whether the organisation could handle the changes proposed to the system.

2. Systems analysis

[Includes Requirement Analysis + system Analysis]

Systems Analysis is an in depth analysis of end user requirements. There are 3 main areas of systems analysis:

- Organisational requirements,
- functional requirements and
- o present system

3. Design

[Includes Specification + System Design]

In systems design the design functions and operations are described in detail, including screen layouts, business rules, process diagrams and other documentation. The output of this stage will describe the new system as a collection of modules or subsystems.

The design stage takes as its initial input the requirements identified in the approved requirements document. For each requirement, a set of one or more design elements will be produced as a result of interviews, workshops, and/or prototype efforts.

Design elements describe the desired software features in detail, and generally include functional hierarchy diagrams, screen layout diagrams, tables of business rules, business process diagrams, pseudo code, and a complete entity-relationship diagram with a full data dictionary.

There are three main activities conducted in this stage; User interface design, data design and process design.

4. Implementation

[Includes Development + Testing and Implementation]

This phase involves the following activities:

- Acquisition of hardware and software
- Systems testing
- End user training
- Systems documentation
- Conversion

5. Maintenance

[Includes Review + Maintenance]

Once the fully implemented system is being used by the users, the maintenance function begins. Systems maintenance is the monitoring, evaluating and modifying of operational information systems to make desirable or necessary improvements. Maintenance stage finds, Failures and problems that arises in operation of the system, make sure that the newly implemented system meets the goals and objectives of the IS planned, identifies modifications needed to the system to make it achieve the company's business objectives.

(10 marks)

c) After deciding to go online, the management was looking at electronic payment methods if there is a necessity to pay online. Briefly describe 3 electronic payment methods.

Credit card

A credit card is a payment card issued to users as a system of payment. It allows the cardholder to pay for goods and services based on the holder's promise to pay for them. The issuer of the card creates a revolving account and grants a line of credit to the consumer (or the user) from which the user can borrow money for payment to a merchant or as a cash advance to the user.

Digital wallet

A digital wallet functions much like a physical wallet. The digital wallet was first conceived as a method of storing various forms of electronic money (e-cash), but with little popularity of such e-cash services, the digital wallet has evolved into a service that provides internet users with a convenient way to store and use online shopping information.

The term "digital wallet" is also increasingly being used to describe mobile phones, especially smartphones, that store an individual's credentials and utilize wireless technologies. An individual's bank account is usually linked to the digital wallet.

Digital Cash

Digital cash can be used for micro payments as well as large payments. Digital cash is currency represented in electronic form. Users are supplied with client software and can exchange money with another e-cash user over the internet or with a retailer accepting e-cash.

Web based peer-to-peer payment systems

Here, the party who sends money uses his or her credit card and creates an account with the designated agent through its website. The recipient picks up the payment by visiting the website and supplying information about where to send the payment. Eg: Paypal.

(3 marks) (Total 20 marks)

PART B

Answer No. 03

a) Information Systems are important for organisations to serve different levels of management and information requirements. Briefly describe four types of Information systems and their functionalities.

TPS - Transaction Processing Systems

As the name implies, Transaction Processing Systems ("TPS") are designed to process routine transactions efficiently and accurately. A business will have several (sometimes many) TPS; for example:

- Billing systems to send invoices to customers
- Systems to calculate the weekly and monthly payroll and tax payments
- Production and purchasing systems to calculate raw material requirements
- Stock control systems to process all movements into, within and out of the business

MIS - Management Information Systems

A management information system ("MIS") is mainly concerned with internal sources of information. MIS usually take data from the transaction processing systems (see below) and summarise it into a series of management reports.MIS reports tend to be used by middle management and operational supervisors.

DSS - Decision-Support Systems Decision-support systems ("DSS") are specifically designed to help management make decisions in situations where there is uncertainty about the possible outcomes of those decisions. DSS comprise tools and techniques to help gather relevant information and analyse the options and alternatives. DSS often involves use of complex spreadsheet and databases to create "what-if" models.

ESS - An Executive Support System ("**ESS**") is designed to help senior management make strategic decisions. It gathers, analyses and summarises the key internal and external information used in the business.

A good way to think about an ESS is to imagine the senior management team in an aircraft cockpit - with the instrument panel showing them the status of all the key business activities. ESS typically involve lots of data analysis and modelling tools such as "what-if" analysis to help strategic decision-making.

(8 marks)

b) Describe the advantages and disadvantages of eCommerce to Buyers and sellers.

Advantages and disadvantages to Buyers

Advantages	Disadvantages
No checkout queues	• Unable to examine products personally
Reduced Prices	 No internet access to some customers
• Shop from anywhere in the world	Addictiveness
• Wide selection to cater for all customers	• Credit card fraud
• Easy access 24 hrs /7 days	Stock unavailability

Advantages and disadvantages to Sellers

Advantages	Disadvantages
Increases market share Access to International Markets	• Hardware software essential and costly
 Access to international markets Increase in productivity 	• Distribution must be efficient
• Greater economies of scale	• Website needs to be updated constantly which leads to extra training and upgrading costs

(7 marks) (Total 15 marks)

There are three approaches viz.

- (i) Technical approach,
- (ii) Behavioural approach
- (iii) Socio-technical approach.

(i) **Technical approach**

The technical approach to a Information Systems (IS) emphasizes mathematically based models to study IS, as well as physical technology and formal capabilities of these systems. The disciplines that contribute to the technical approach are the computer science, management science and operation research.

Computer science is concern with establishing theories of computability, methods of computation, and methods of efficient data storage and access. Management science emphasizes the development of models for decision making and management practices. Operation research focuses on mathematical techniques for optimizing selected parameters of organizations, such as transportation, inventory control and transaction costs.

(ii) **Behavioural approach**

IS field is concern with behavioural issues that arises in the development and usage of IS in the long run. Issues such as strategic business integration, design, implementation, utilization and management cannot be explored usefully with the models used in the technical approach. The discipline that contribute to behavioural approach include sociology, psychology and economics.

Sociologists study IS with the aim of studying how groups and organizations shape the development of systems and also how systems affect individuals, groups, and organizations. Psychologist study IS with an interest to examine how human decision makers perceive and use formal information. Economists study IS with the objective of examining what impact system have on control and cost structures within firm and within markets.

The behavioural approach does not ignore technology aspect completely. Indeed iIS technology is often the stimulus for a behavioural problem or issue. The focus of this approach is not on technical solutions. Instead, it concentrated on changes in attitudes, management, organization policy, and behavior to provide solutions for the behavioural problems faced by the organizations.

(iii) Socio-technical approach

It is believed that neither the technical approach nor the behavioural approach alone effectively captures the reality of IS. The success and failures of IS are rarely all technical or all behavioural. If so what would be the solutions for organizations?

The answer is the adoption of socio-technical systems which help to avoid a purely technological approach to IS. Even though IT is rapidly declining in cost, and growing in power it does not solutions it does not necessarily or easily translate into productivity enhancement or bottom-line profits. The fact that a firm has recently installed an enterprise wide financial reporting system does not necessarily mean that it will be used or used effectively by employees due to behavioural issues of employees. Likewise the fact that a firm has recently introduced new business procedures and processes does not necessarily mean employees will be more productive in the absence of investments in the new IS, to enable those processes.

Therefore, when developing IS, focus should be made to both approaches, technical and behavioral.

(Total 15 marks)

- (a) A business organization needs information for its Planning, Controlling, Decision-making, Measuring Performances, and Improving specific areas.
 - i. Planning Proper planning needs variety of information such as available resources in the organization, market information, customer information etc.
 - ii. Controlling Information is required to determine whether the organization is moving as planned. If the organization does not achieve what it expected, corrective actions are taken based on information.
 - iii. Decision-making Effective decisions are based on good information. There are a variety of characteristics such as accuracy, timeliness, relevance etc of good information.
 - iv. Measuring Performance Performance measurement of organizations as well as its employees is very vital. Variety of information is used as the main way of measuring performance.
 - v. Improving specific areas Timely and accurate information help decision making to help improve specific areas.

(10 marks)

- (b) The two main type of source of data and information:
 - (i) Internal Information (Data)
 - (ii) External Information (Data)

(1 mark)

(c) (i) Internal Information (Data) – Internal information is generated within the organization, related to its business. These could be about the financial, production processes, materials, employees, management issues, logistics etc,

Managers at various levels, specially at Middle, Operational levels can use these information to detect issues / improve business activities within the company.

(ii) External Information (Data) – The information obtained from outside to the business. The organization should be aware of the changes in the related environment. These may be related to competitors, customers, suppliers, markets, legal issues, taxes, government rules etc. There may be new processes/ inventions emerging for production, business etc.

Mostly strategic level managers can use this information to focus the company strategies / face the external challenges to the company. (4 marks)

(Total 15 marks)

(a) Every computer has to communicate to the outside world through an Output Medium or media. The computer system will have a target group to communicate with. Depending on this group, Output media has to be selected. The common media are Paper with text, graphs and diagrams, images, VDU with text and images, Voice -audio, transmission out – Mails to another computer or to a mobile phone, dispensing a material including cash.

The economic scale of the output is important. If in paper medium, if several copies like in a Bill is printed on large paper, very frequently, it s uneconomical- both spending time and paper, ink, power, human supervision, dispatch and others which leads to high cost and waste. If VDU are used the size of the screen is important. For a large crowd a projector (Multimedia) may be required. For blind persons, paper or VDU are not appropriate but a voice system should be used. Some outputs may not require displays immediately . The Output may be recorded into a suitable intermediate media such as a CD ROM (DVD), a pen-drive, to be used at a later time.

Some outputs may be an Alarm, Audio or Light illumination. Perhaps invoking a recorded Message across a wide area.

Some output may warrant human intervention leading to another input or change in process, for system continuation.

(7 marks)

(b) Factors to be considered for selecting a Printer.

There are several type of printers and proper selection is very critical today. A wrong selection can lead to waste of resources, not meeting the objective and increased cost to the services.

Broadly, printers can be classified as Line Printers, Dot-Matrix Printers, Laser Printers, Inkjet Printers, Thermal Printers, Plotters and Screen Printers. The Cost, User environment and the purpose, Quality, quantity and size of Output required and the timeliness (Speed), stand alone or Networked are the major factors to be considered in selecting a Printer for jobs. Printing may be required on special surfaces other than paper.

- User Cost Hardware, paper, ink, ribbon, toner, electricity
- User environment Single user or multiple users, noisy / quite place, chemical fumes, dust
- Quality of the output
- Printable Size of paper etc
- Quantity and size of the output
- Speed timeliness
- Stand alone or Networked
- Surface nature of printing medium and shape
- Black & white or Colour ink

(8 marks) (Total 15 marks)

(a) Majority of accounting software packages have been developed modular wise. Different vendors will use different names for these modules and the purchaser company can select their version including most of these modules on a variable cost basis.

Basically the Accounting package to be purchased should be supportive of day-to-day work of the company, without duplicating data entry etc. Most processes should be automatic.

Depending on the business of the company, different modules dealing with different areas of accounting can be integrated.

It is possible to identify the Core Modules and Non-Core area Modules separately, of the package needed.

Usually the Core Modules should include :

- Accounts Receivable where the company enters money received
- Accounts Payable- where the company enters its bills and pays money it owes
- General Ledger the company's book
- Billing- Where the company produces invoices to clients/ customers
- Stock/ Inventory Where the company keeps control of the inventory
- Purchase order where the company orders inventory
- Sales Order- where the company records customer orders for the supply of inventory
- Cash Book where the company records the collection and payments.

In the evaluation, the availability and dependability of the essential core modules has to be ascertained.

Thereafter, the desirable Non-Core Modules which can produce additional facilities can be evaluated. Some non-core modules can be:

- Debt Collection where the company tracks attempts to collect overdue bills
- Electronic payment processing use modern banking methods for payments
- Expense where employee business related expenses are entered
- Inquiries where the company look up information on screen without any edits
- Payroll where the company tracks salary, wages, and related taxes
- Reports where the company printouts data
- Time sheets- where the professionals record time worked to bill clients
- Purchase requisitions where purchase orders are made, approved and tracked.

(8 marks)

- (b) Main advantages are:
 - Each transaction needs to be entered only once. As Integrated ledger system all relevant entries will get recorded in to different accounts etc
 - Speed Data entry onto computer is easy through formatted VDU screens more quickly than the manual system
 - Automatic document production- fast and accurate invoices, credit notes, purchase orders, printing statements, payroll are done automatically
 - Accuracy Very much accurate than manual systems because of built in check and balances
 - Up-to-date information Automatically up dated and balances are maintained
 - Availability of information Data is instantly available for different users, at the same time.
 - Management Information Reports can be easily produces for management for monitor and control the business easily
 - Legibility Screen and Printouts are clear and legible
 - Efficiency Better use of resources and time
 - Staff Motivation Staff feel more motivated to work on the System than the manual system
 - Cost saving Reduce staff time and reduce audit expenses with time.
 - Reduce frustration Management is on top of their accounts and reduce stress levels.
 - Ability to work with a multiple Currency system

(7 marks) (Total 15 marks)

(a) Disaster is an unexpected situation faced by the Information System where it cannot function in the normal way due to a hardware or software damage beyond self diagnosed /repair, which need external help to rectify matter,. There can be Natural Disasters and Manmade disasters.

(2 marks)

- (b) To maintain Business continuation after a disaster, the company should have had a well thought about Disaster Recovery Plan (DRP). Its stages / steps would be:
 - 1. Identify the scope and boundaries of Disaster Recovery Plan. Define the scope of DRP. It provides an idea for limitations and boundaries of plan. It also includes audit and risk analysis reports for institution's assets.
 - 2. Carry out a Business Impact analysis (BIA). Identify the major financial losses /impact in the event of a Disaster
 - 3. Prepare action to recover from each disaster. The detailed actions to be laid down in the plan
 - 4. Get the approval for the DPR from the senior management. Convincing senior management to approve DRP is a key task.
 - 5. Each Business Unit need to understand its role in plan and support to maintain it. In case of disaster, each business unit has to be prepared for action. To recover and to protect the critical systems in the business units, it has to understand the plan and follow it accordingly. It is also important to maintain and help in the creation of a plan for each individual business unit.
 - 6. The DRP Project team must implement the plan. After approval from the management, plan should be maintained and implemented. Implementation tea should follow the guidelines, and procedures in the plan. The DRP Plan should be reviewed periodically and updated where necessary.

(8 marks)

- (c) Strategies used to recover the business data
 - Backups made to tape /removable disks and sent off-site at regular intervals.
 - Backups made to disk on-site and automatically copied to off-site disk or made directly to off-site disk.
 - Replication of data to an off-site location, which overcomes the need to restore the data.
 - Prepare a high availability system which keep both data and system replicated off-site, enabling continuous access to system and data.
 - With Wide Area Network Optimization Technology- improve disaster recovery and increase network response time.

(5 marks) (Total 15 marks)



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