1 Introduction to Information Management

1.1 Summary

Information is the backbone of operations and survival for any modern business. Information is distinguished from data as a result of data processing operations. After *data* is processed and shaped in a meaningful form useful in business environment, it turns into *information*. In order to be useful to business and effectively support business processes, data is typically organised using a particular *data model*. A data model determines how data items are arranged into a hierarchy comprising of *data elements* and *data structures*. Data items are characterised by a *data type*. Standard data types include numbers, text, date and time units, with more complex data types are now available. In order to distinguish various types of information processed and generated in a business organisation it is necessary to distinguish between *strategic, management* and *operational levels* in an organisation. Information required by each level differs in its origin (external or internal to organisation), time frame (long, medium or short term), level of detail, etc. How a business aligns its information assets with its business objectives is stated in the *information strategy* document. Whereas practices on information capture, use, risks and security are typically specified in an *information policy*.

Ever-increasing complexity of modern business has lead to the emergence of a wide range of software designed to help business derive value from their information assets. Such software ranges form spreadsheets to integrated Enterprise Resource Planning Systems (ERP) with more and more emphasis being put onto collaboration and communications features of modern software.

1.2 Answers to the Review Questions

1. What are the major differences between *data* and *information*?

Answer: Raw, unprocessed streams of facts are usually referred to as *data*. Entries of numbers, text, images or other forms of computerized output are considered data. Raw data, however, is a relative term as data processing may have a number of stages, so the output from one processing stage can be considered to be raw data for the next. After, data is processed and shaped in a meaningful form useful to a person or computer, it turns into *information*.

2. Outline some characteristics of information typically required for strategic decision making.

Answer: Senior management will focus on general, or *strategic*, issues related to overall business development in the long term. At this level decisions tend to relate to issues with long term such as restructuring, major financial investments and other strategic undertakings related to company's future rather than present. Information necessary for decision making at this level is comprehensively gathered not only from the internal sources of the company itself, but also involves external information, such as data related to economic situation or sectors as a whole.

3. Distinguish between the types of information used for operational and management decision making?

Answer: At the *operational level* decisions are made to ensure smooth running of operational processes or day-to-day business. At this level it is necessary to oversee that resources are used efficiently, inventory is up to date, production levels are as planned, etc. Decision making at this level requires information almost entirely internal to the company, although it may be extremely detailed and real-time.

Information for decision making at *management level* has a typical timeframe ranging from weeks to several month or a year. Middle management usually controls medium term scheduling, forecasting and budgeting operations. These rely on internal as well as occasional external information. For instance, setting the quarterly budget requires the knowledge of current expenditure as well as external pricing information.

4. Describe the constructs of a data model? What is the purpose of specifying data types?

Answer: In order to be useful to business and effectively support business processes, data is typically organised using a particular *data model*. A data model determines how data items are arranged into a hierarchy comprising of *data elements* and *data structures*. Data items are characterised by a *data type*. Standard data types include numbers, text, date and time units, with more complex data types are now available.

5. Describe how data elements such as letters in English alphabet are represented on computer hardware?

Answer: Standard data types, such as text – a series of characters composed of characters from the alphabet and other symbols, numbers – integer, decimal, float and other types of numbers, and time including dates, seconds, minutes and hours, are among most commonly used in business information systems. Computers and other electronic devices store data using strings of characters coded based on a standard character set. Although invisible to an average computer user, encoding character set represents a standardised coding scheme. For instance, text consists of symbols or letters, each letter or punctuation mark has a corresponding sequence of symbols from the encoding set uniquely representing this text element for hardware and software manipulation. ASCII – American Standard Code for Information Interchange – has become a default standard character sets used on most personal computers and workstations. The ASCII coding scheme, based on the English alphabet, provides encoding for 128 symbols. In ASCII the capital A is represented by the binary string or word 10100001.

6. What kinds of software applications are used for handling operational data as well as generating strategic information?

Answer: Database Management Systems (DBMS) permit to efficiently manage, secure and analyse data, as well as interface to other software applications

7. What document specifies how an organisation handles its information?

Answer: To provide specific guidelines to their employees, contractors, trading partners and other external stakeholder on the processing, storage and communication of various types of information, business firms usually create an *information policy* document. This document is extremely important when an organisation handles security sensitive data or is subject to government guidelines related to information processing. It defines sensitivity levels of information and lists who has access to each level. The aim of the information policy is to make sure that information assets of a company are appropriately protected from threats or disclosure.

8. What is the purpose of an information strategy document?

Answer: An information strategy is developed to support the overall business strategy of an organisation and explains how information should be captured, processed, used and disposed of throughout its lifecycle. Although the structure of an information strategy varies from business to business, there are some common areas included in most information strategy documents such as:

• Overview of Information Resources	Summary of resources, their utilisation by internal staff and external stakeholders, key projects, budgeting, etc.
• Information Architecture and IT Structure	Description of the IT infrastructure, key projects, itemisation of data sources and their purpose.
• External Factors	Analysis of the competition, the economy, government policy and technological advances.
• Opportunities	Analysis of new business opportunities arising from information and technologies.
• Risk Analysis	Description of internal and external threats, analysis of compliance with regulations, summary of information usage by competitors.
• Schedule	List of milestones and review dates to indicate if the strategy is executed well.

9. What problems arise when information becomes decentralised in a business organisation?

Answer: Without an organisation-wide plan and data administration procedures in place business may encounter such problems as:

- **Data redundancy** – whereas data becomes duplicated and stored at several locations in more than one file.
- **Poor Data Availability** – data becomes isolated and available only to the owner of a particular file in a file system. Sharing of data and its visibility to employees becomes reduced.
- **Poor Data Security** – data spread across business in various forms and locations reduce the ability of a business to set proper security controls and ensure authorised access to information.
- **Error-Prone Data** – when same data exists at multiple locations it become more vulnerable to human errors introduced by different employees and mistakes tend to go unnoticed for longer.

10. Give an example of how information systems support major business processes in sales, finance, production or human resources?

Answer: The Sales department stores data about customer orders. Finance and Accounting use sales data to generate invoices and process payments. The Marketing department draws on the customer data and sales information for effective marketing campaigns. Human Resources store information about company employees, their skills and professional development needs. The central database facilitates keeping track of stock and production levels for manufacturing and production areas of business. Centralised information helps even a small business run effectively and rely on real-time information.

1.3 Case Study: Walmart Harnesses RFID Technology to Improve Efficiency

Recommended Sources:

[1] http://walmartstores.com/FactsNews/NewsRoom/7894.aspx
[2] http://tompiselloroiguy.blogspot.com/2006/11/roi-of-rfid-in-supply-chain.html
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[4] http://www.ft.com/cms/s/0/6a4d57a6-70d5-11da-89d3-0000779e2340.html
[5] http://www.computerworld.com/softwaretopics/erp/story/0,10801,82155,00.html