ACC2400 Accounting Information Systems

Theory

Excel

Conceptual Foundation of AIS

<u>Data & information concepts</u>

- **Data** are facts that are collected, recorded, stored, and processed by an information system.
- **Information** is processed and organised data that provides meaning and is useful, especially for improving decision making.
- Characteristics of **useful information**
  - *Relevant* – reduces uncertainty, improves decision-making, or confirms or corrects prior expectations
  - *Reliable* – error/bias free; accurately represents organisation events or activities
  - *Complete* – does not omit important aspects of the events or activities it measures
  - *Timely* – provide din time for decision-makers to make decision
  - *Understandable* – presented in a useful and intelligible format
  - *Verifiable* – two independent, knowledgeable people can produce the same info
  - *Accessible* – available to users when they need it and in a format they can use

<u>Data processing</u>

Three types of updating process:

- **Batch processing:** Accumulates transactions into batches for processing at a regular interval
- **Online, real-time processing:** Processes data immediately after capture and provides updated information to users on a timely basis
- **Online batch processing:** Transaction data are entered and edited as they occur and stored for later processing

Enterprise Resource Planning (ERP) System

An **ERP system** is a packaged business software system that allows a company to:

- Automate and integrate the majority of its business processes
- Share common data and practices across the entire enterprise
- Produce and access information in a real-time environment

Pros	*Cons*
− Integrates enterprise data and info flows within an organisation and between organisations − Streamline data inputs and eliminate data duplication within an organisation → enables higher staff productivity & work efficiency − Increase enterprise info transparency − Standardises transaction data and information access control and security − Standardises work procedures and reports − Enables faster time to market & better customer services − Enables real time information sharing/exchanges, leading to realise operational & strategic benefits faster & immediate	− High cost of implementation & maintenance − Long implementation time and benefits realisation − Need to improve and standardise current business processes, otherwise risk implementation failure − Complex organisation change management − Exposed to people resistance, because new ERP implementations change jobs, procedures, chain of command/power, short term, often negative impacts to profits/loss performance

Computer Fraud & Cyber Security

Computer fraud

- **Computer fraud** is when a computer is used to commit fraud
  - *Input fraud* – info is being swapped/stolen
  - *Transaction info output* – changing the outputs of the info system

Preventing and detecting fraud

Make fraud less likely to occur (Preventative Measures)

Organisational	Systems
➢ Create a culture of integrity ➢ Adopt structures that minimises fraud, create governance (e.g., Board of Directors) ➢ Assign authority for business objectives and hold them accountable for achieving those objectives, effective supervision and monitoring of employees ➢ Communicate policies	➢ Develop security policies to guide and design specific control procedures ➢ Implement change management controls and project development acquisition controls

Make it difficult to commit (Preventative)

Organisational	Systems
➢ Develop strong internal controls ➢ Segregate accounting functions ➢ Use properly designed forms ➢ Require independent checks and reconciliations of data	➢ Restrict access ➢ System authentication ➢ Implement computer controls over input, processing, storage, and output of data ➢ Use encryption ➢ Fix software bugs and update systems regularly ➢ Destroy hard drives when disposing of computers

Improve detection method (Detective Measure)

Organisation	Systems
➢ Insurance ➢ Business continuity and disaster recovery plan	➢ Store backup copies of program and data files in secure, off-site location ➢ Monitor system activity

Cyber-attacks and abuse methods

- **Cyber attacks** are unlawful data breaches (or hacks) executed by intentional fraudsters or criminals to defraud or commit crimes against someone or organisations
- **Hacking** is the main cause of data breach
- **Negligence** is the main reason why hacking is so successful
- **Hijacking** is gaining control of a computer to carry out illicit activities without the user's knowledge
- **Denial of Service (DoS)** attack typically uses one computer and one Internet connection to flood the targeted server thus disabling it
- **Social engineering** is the use of psychological manipulation and techniques that involve human interactions, to trick users into making security mistakes or giving away sensitive info that allows hacking to take place

AIS Process Integrity & Availability

<u>Input controls</u>

Data entry control	Definition	Examples
Field check	An edit check that tests whether the characters in a field are of the correct field type (e.g. numeric data in numeric fields)	Quantity sold: Allow 150 but not one hundred and fifty
Sign check	An edit check that verifies that the data in a field have the appropriate arithmetic sign	Quantity sold: Allow 150 but not -150
Limit check	An edit check that tests a numerical amount against a fixed value	Maximum hours worked per week is 40
Range check	An edit check that tests whether a data item falls within predetermined upper and lower limits	Hours worked per week must be more than 0 and less than 50
Size check	Ensures the correct amount of data is inputted	8-digit Student ID
Completeness check	An application control that verifies that all data required have been entered	Data entry screen has 3 fields but only 2 fields have entries
Validity check	An edit test that compares the ID code or account number in a transaction data with similar data in the master file to verify that the account exists	Customer ID entered is not in the master file
Reasonableness test	An edit check of the logical correctness of relationships among data items	Overtime for the day should be 0 for employee who has not worked for the maximum no. of hours worked of 10
Check digit verification	Recalculating a check digit to verify that a data entry error has not been made	Credit card numbers
Closed-loop verification	An input validation method that uses data entered into the system to retrieve and display other related information so that the data entry person can verify the accuracy of the input data	
Financial total	A type of batch total that equals the sum of a field that contains monetary values	
Hash total	The sum of a numerical item for a batch of documents, calculated prior to processing the batch when the data are entered, and subsequently compared with computer-generated totals after each processing stop to verify that the data was processed correctly	
Record count	A type of batch total that equals the number of records processed at a given time	

AIS Process Integrity & Availability

Control frameworks

- **Control objectives for information & related technology (COBIT):** Framework for IT governance and management
  Five principles of COBIT:
  1. Meeting stakeholder needs
  2. Covering enterprise end to end
  3. Applying a single integrated IT framework
  4. Enabling a holistic approach
 5. Separating governance from management
- **Committee of Sponsoring Organisation issued Internal Control (COSO-IC)**
  - Defines internal control
  - Provides a guidance for evaluating and enhancing internal control systems
  - Takes a (process) control approach to mitigate security vulnerabilities
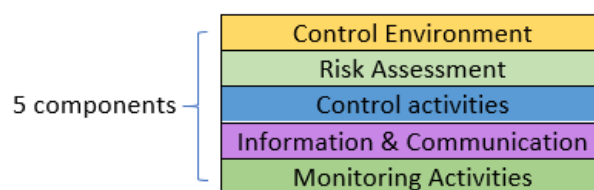
- **Committee of Sponsoring Organisation – Enterprise Risk Management (COSO-ERM):** Takes a *risk-based approach* to mitigate security vulnerabilities
  - Identifies enterprise objectives' risk exposures, risk events & responses
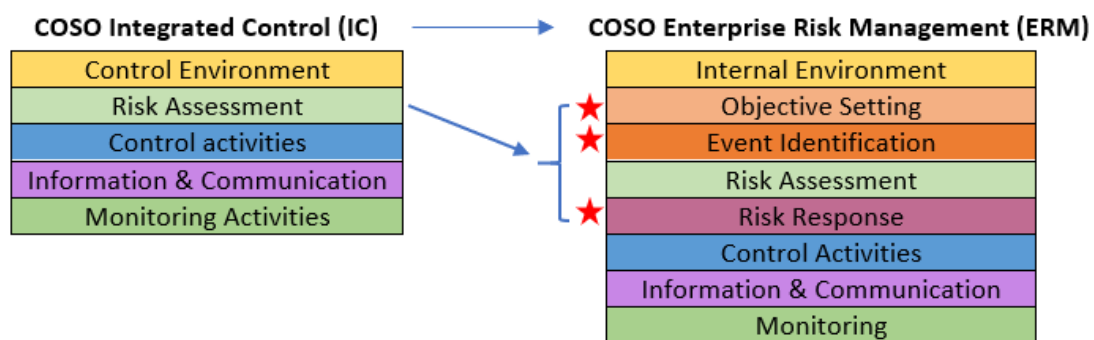
TEST

At Atlantic Richfield data errors occasionally required an entire payroll to be reprocessed, at a cost of $10,000. A data validation step would reduce the event likelihood from 15% to 1% at a cost of $600 per pay period. Should Atlantic Richfield implement the validation procedure?

	Without Procedure	With Procedure	Next Expected Difference
Cost to reprocess payroll	$10,000	$10,000	-
Likelihood of payroll data errors	15%	1%	-
Expected reprocessing cost (Cost x likelihood)	$1,500	$100	$1,400
Cost of validation procedure	$0	$600	-$600
Net expected benefit of validation procedure			$800

Answer: Yes. There is an $800 expected benefit as a result of the validation procedure.
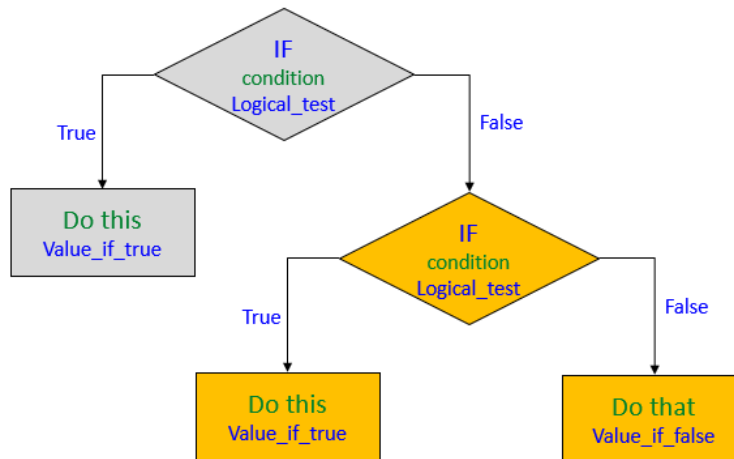
Excel Notes

Advanced Functions for FM

<u>Nested logical functions</u>

IF statements can be nested; that is, an IF statement is inside another IF statement:

$$=IF(logical\_test, IF(logical\_test, [value\_if\_true], [value\_if\_false]), [value\_if\_false])$$

If there are three outcomes, put two IF functions.
If there are four outcomes, put three IF functions, etc.

<u>Lookup functions</u>

A **lookup function** is a function to retrieve data from a specific column or row in a table.

- The **VLOOKUP function** (V stands for Vertical) retrieves data from a specific *column* in a table
    - =VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])
    - range_lookup: TRUE = approximate match (default) and FALSE = exact match
- The **HLOOKUP function** (H stands for Horizontal) retrieves data from a specific *row* in a table
    - HLOOKUP(lookup_value, table_array, row_index_num, [range_lookup])

<u>Aggregate functions</u>

Function	Description/Syntax	Condition
COUNTIF	Count the cells that meet a condition =COUNTIF(range, criteria)	1
COUNTIFS	Count the cells in multiple range based on multiple conditions =COUNTIFS(criteria_range1, criteria1, [criteria_range2, criteria2]…)	>=1
SUMIF	Add the cells specified that meet a condition =SUMIF(range, criteria, [sum_range])	1
SUMIFS	Add the cells specified by a given set of conditions =SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2]…)	>=1
AVERAGEIF	Finds average for the cells that meet a condition =AVERAGEIF(range, criteria, [average_range])	1
AVERAGEIFS	Find average for the cells specified by a set of conditions =AVERAGEIFS(average_range, criteria_range1, criteria1, [criteria_range2, criteria2]…)	>=1