APA revision

LECTURE 1

Accounting information system: An accounting information system captures, records, stores and enables extraction of data that describes the economic exchanges of the company. The data captured provides an abstract of reality. It translates economic events into meaningful data. System design choices have consequences for what data is captured, how the data is captured and stored and the quality of the data.

Reliability	**Transactions**	**Balances**
Validity	Does the data recorded capture an actual economic event (business transaction)? Did the event actually occur and if so, was it authorised (occurrence)? E.g. Woolworth's glitch - *Informational POV:* valid because did pay price charged. *Operational POV:* invalid because price charged was not authorised.	Does the data recorded capture an actual economic event (A/L/OE)? Does the A/L/OE actually exist (existence)?
Accuracy	Is the transaction/data captured correctly recorded?	Are all the A/L/OE correctly valued?
Completeness (detail level)	Are all the fields of a transaction that should have been recorded recorded?	Are all the A/L/OE that relate to the entity that should have been recorded recorded?
Completeness (event level)	Are all transactions that should have been recorded recorded?	Are all the A/L/OE that relate to the entity that should have been recorded recorded?

4 basic sub-processes in the transformation of an economic event into information:

1. Economic event occurs
2. Economic event is recorded
3. Master data is updated
4. Reports are generated.

Temporal gap: the time between the business event and recording in the master data.

As the temporal gap increases,

- More opportunities for *invalid* events to be entered into the system
- Less opportunity to use automated controls that require master data to ensure information *validity* and *accuracy*.
- Risk that information about an event is lost and the master data is *not complete*.

Different processing modes

Processing mode	**Explanation**	**Temporal gaps**
Periodic (batch) processing	Data is recorded later (*transactions processed as a batch*) and the transactions are updated to the master data later (*periodically in batches*).	2 temporal gaps - Between the business event and its recording - Between the business event being recorded and master data being updated.

Online entry processing	Data is recorded immediately in an event file when the business event occurs (*transactions processed individually*) and the transactions are updated to the master data later (*periodically in batches*).	1 temporal gap - Between the business event being recorded and the master data being updated.
Online real-time processing	Data is recorded immediately in an event file when the business event occurs (*transactions processed individually*) and the transactions are updated instantaneously to master data (*transactions processed individually*).	No temporal gaps.

TECHNOLOGY.

Technology	Example	Advantages	Disadvantages
Manual keying	Small retail store, IGA, used by data entry personnel.	- Efficient for small volumes of input - Cost efficient	- Time consuming/slower - Prone to error if appropriate input controls do not exist (random errors or intentional fraud)
Barcode scanning	Supermarket	- Quick, efficient, accuracy of data input - Decreases the cost of having more physical stocktakes	- No universal standard for barcodes - Needs direct line of sight - If barcode damaged, means an incomplete transaction - Costly to set up - If there is an error, the error is systematic – all barcodes scanned will have the error therefore can cause substantial losses
MICR (magnetic ink character recognition)	Bank cheques	- Security benefits - Processing efficiency	- Different countries use different styles of MICR fonts - Requires a special magnetized ink - Not fool-proof and can be used for fraud - Specialised and therefore expensive to set up
Image scanning	Capturing documents electronically	- Captures images as well as text - Reduces paper storage	- Files can be large - Items of data cannot be easily extracted from the single file - Need special software to pick out data or manually extract data, therefore risk of errors.
Voice recognition	iPhone, telephone queries	- Human like interaction - Increased convenience and ease of use	- Effect of accents and pronunciation on ability to recognise inputs, therefore risk of errors - Need to train the system to recognise
Optical mark readers	Multiple choice exams	- Accuracy, speed of scanning, no need for data validation	- Requires standardised input forms, specialised software and specialised scanning devices therefore costly to set up - Risk of errors – human and systematic.

Example answer for grocery store technology:

Given that the business context is that of a grocery store, it would seem that several of the technologies mentioned in question 1 can be ruled out immediately. The eliminated technologies would include MICR, image scanning, voice recognition and optical mark readers. This leaves manual keying and barcode scanning. The selection between the two would then depend on contextual matters, such as the volume of transactions being processed and the required speed for handling the transactions.

For a large grocery store, barcode scanning would appear to be the logical choice, with its benefits of quick and accurate data capture and the ability to immediately update inventory data as the goods are sold. For a large organisation, the costs of such a system can probably be spread, allowing a certain degree of economies of scale to be attained. However, there is a risk that if the data recorded in the database is incorrect every time a transaction is scanned, then the data will be recorded incorrectly. This can quickly lead to large costs for the organisation. For example, if scanning the barcode triggers the information system to extract the sale price for the item from the database and the sales price has been recorded incorrectly in the database, every transaction will be recorded with an incorrect sales price until the database is updated (systematic error). However, if the price is correct, barcode scanning is advantageous because it will help achieve validity and accuracy of the sales data, in that the approved sales price is charged (validity) and the correct sales price is charged (accuracy). Because a barcode scanner requires direct line of sight between the reader and the barcode, there is a risk that not all inventory items are recorded for sale (completeness at the detail level is not achieved) if the sales person passes an item quickly without checking that it has been captured by the scanner. If no items for the transaction are scanned, then there is a risk of completeness at the event level if a customer could walk out of the store with the goods.

A smaller organisation may prefer manual keying of sales transactions, provided that transactions were typically not of a large size (in terms of number of items to be entered) and speed was not a critical factor. Because manual keying requires an operator to input either the item code and/or the price there is a high risk that the operator could make an accidental or intentional error in inputting the incorrect product and/or price, and or not recording the transaction. Manual keying increases the risk that validity, accuracy and completeness are not achieved. Appropriate input validation controls are required. Manual keying errors tend to be more random, which can decrease the efficiency and effectiveness of preventing, detecting and correcting errors because the random nature of the errors mean they are less predictable.

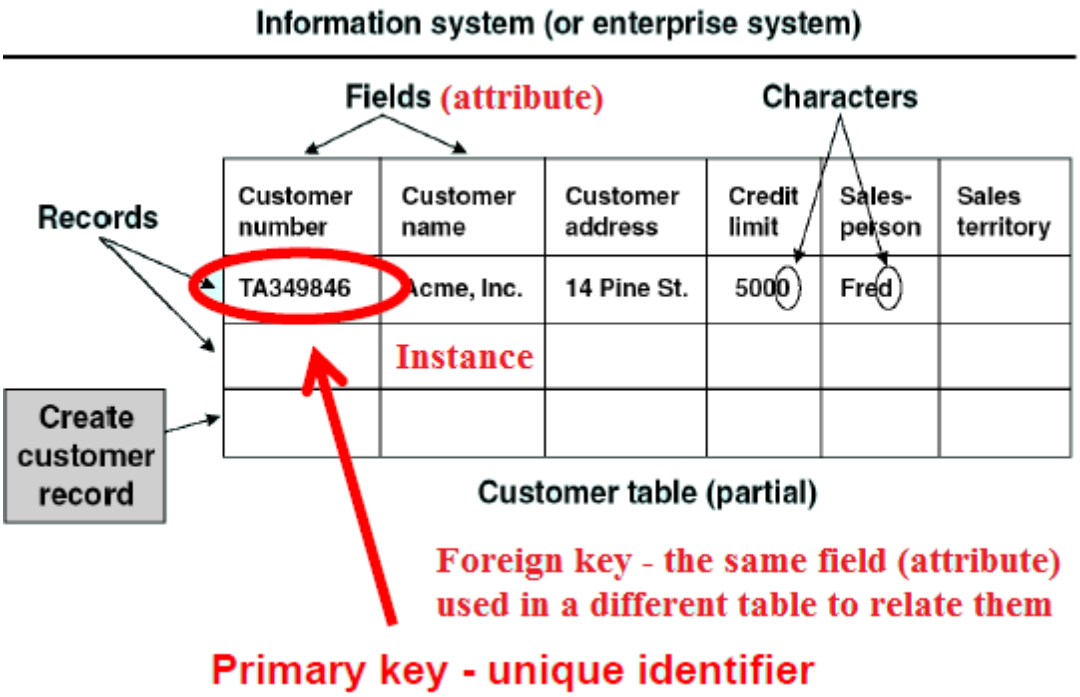
LECTURE 2

Accounting: the art of recording, classifying and summarising in a significant manner and in terms of money, transactions and events which are, in part at least, of financial character, and interpreting the results thereof. It is a structured collection of financial data about economic states and events. Accounting is based on the concept of duality.

Economic event: a pair of requited transactions. An exchange.

Economic exchange (flows): R – E =P, an aggregated value over a period of time.

Economic states (stakes): A – L = OE, a value at a point in time.



THE 3 ANOMALIES.

Modification anomaly: occurs when changing the data in relational tables. Occurs when an instance is changed and the change is not updated to all related tables. The data therefore becomes inconsistent (low data integrity). This can impact on both **validity** and **accuracy**.
Validity: if there is more than 1 result for the same data field then we cannot tell which result is the valid one.
Accuracy: the results are inconsistent and therefore not all of them are accurate.

Insertion anomaly: occurs when certain attributes cannot be inserted into the database without the presence of other attributes. This database design is not feasible. This can impact on **validity**, **accuracy** and **completeness**.
Validity: risk of "workarounds" – the person may fake the incomplete data fields in order to be able to enter the piece of information into the system which risks the validity of the information.
Accuracy: because the person needs to enter multiple elements to the incomplete data fields, this increases the risk of data entry error.
Completeness: if the person decides not to enter the requested data into the incomplete fields, it is incomplete at the detail level.

Deletion anomaly: when certain attributes are lost because of the deletion of other attributes which are related, resulting in null values in fields which may be part of the primary key. This impacts on **accuracy** and **completeness**.
Accuracy: refilling fields that have been deleted increases the risk of random data entry errors.
Completeness: deletion anomaly means that the data is no longer complete at the detail level.

To decrease the occurrence of the three anomalies, data tables are 'normalised' to eliminate 'data redundancy' by splitting the table into multiple tables.

Student ID#	Student Name	Campus Address	Degree	Phone	Subject ID	Subject Title	Lecturer Name	Lecturer Office	Lecturer Phone	Sem.	Grade
A121	Joy Egbert	166 Grattan Street	B.Com.	555-7771	ACC101	Accounting	Davern	T240C	8344-1846	1-11	H1
A121	Joy Egbert	166 Grattan Street	B.Com.	555-7771	ECO101	Economics	Smyth	T240F	8344-1868	1-11	H2B
A121	Joy Egbert	166 Grattan Street	B.Com.	555-7771	ECO104	Quant. M.	Collier	T240D	8344-5716	1-11	H2B
A121	Joy Egbert	166 Grattan Street	B.Com.	555-7771	FIN101	Finance.	James	T240D	8344-5275	1-11	H2A
A121	Joy Egbert	166 Grattan Street	B.Com.	555-7771	ACC103	Processes	Wise	T240E	8344-5309	1-11	H3
A123	Larry Mueller	302 Royal Parade	B.Com.	555-1235	ACC101	Accounting	Davern	T240C	8344-1846	1-11	H1
A123	Larry Mueller	302 Royal Parade	B.Com.	555-1235	ECO101	Economics	Smyth	T240F	8344-1868	1-11	H2B
A123	Larry Mueller	302 Royal Parade	B.Com.	555-1235	ECO104	Quant. M.	Collier	T240D	8344-5716	1-11	H2A
A123	Larry Mueller	302 Royal Parade	B.Com.	555-1235	FIN101	Finance.	James	T240D	8344-5275	1-11	H3
A124	Mike Guon	224 Swanston St.	B.Eco.	555-2214	ACC101	Accounting	Davern	T240C	8344-1846	1-11	H2A
A124	Mike Guon	224 Swanston St.	B.Eco.	555-2214	ECO101	Economics	Smyth	T240F	8344-1868	1-11	H2A
A124	Mike Guon	224 Swanston St.	B.Eco.	555-2214	ECO104	Quant. M.	Collier	T240D	8344-5716	1-11	H2B
A124	Mike Guon	224 Swanston St.	B.Eco.	555-2214	ACC103	Processes	Wise	T240E	8344-5309	1-11	H2B
A126	Jackie Judson	85 Barry Street	B.Eco.	555-1245	ACC101	Accounting	Davern	T240C	8344-1846	1-11	H1
A126	Jackie Judson	85 Barry Street	B.Eco.	555-1245	ECO101	Economics	Smyth	T240F	8344-1868	1-11	H2B
A126	Jackie Judson	85 Barry Street	B.Eco.	555-1245	ECO104	Quant. M.	Collier	T240D	8344-5716	1-11	H2B
A126	Jackie Judson	85 Barry Street	B.Eco.	555-1245	ACC103	Processes	Wise	T240E	8344-5309	1-11	H2A
...	...	...	...	...	...	...	...	...	...	...	...

Student Table

Student ID#	Student Name	Campus Address	Degree	Phone
A121	Joy Egbert	166 Grattan Street	B.Com.	555-7771
A123	Larry Mueller	302 Royal Parade	B.Com.	555-1235
A124	Mike Guon	224 Swanston St.	B.Eco.	555-2214
A126	Jackie Judson	85 Barry Street	B.Eco.	555-1245
...	...	...	...	...

Enrolled Table

Student ID#	Subject ID	Sem.	Grade
A121	ACC101	1-11	H1
A121	ECO101	1-11	H2B
A121	ECO104	1-11	H2B
A121	FIN101	1-11	H2A
A121	ACC103	1-11	H3
A123	ACC101	1-11	H1
A123	ECO101	1-11	H2B
A123	ECO104	1-11	H2A
A123	FIN101	1-11	H3
A124	ACC101	1-11	H2A
A124	ECO101	1-11	H2A
A124	ECO104	1-11	H2B
A124	ACC103	1-11	H2B
A126	ACC101	1-11	H1
A126	ECO101	1-11	H2B
A126	ECO104	1-11	H2B
A126	ACC103	1-11	H2A
...	...	...	...

Class/Subject Table

Subject ID	Subject Title
ACC101	Accounting
ECO101	Economics
ECO104	Quant. M.
FIN101	Finance.
ACC103	Processes
...	...

Teaching Assignment

Subject ID	Sem.	Lecturer Name
ACC101	1-11	Davern
ECO101	1-11	Smyth
ECO104	1-11	Collier
FIN101	1-11	James
ACC103	1-11	Wise
	...	...

Lecturer Table

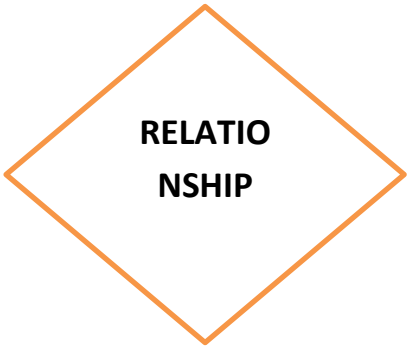
Lecturer Name	Lecturer Location	Lecturer Phone
Collier	T240D	8344-5716
Wise	T240E	8344-5309
Smyth	T240F	8344-1868
Wilkin	T240D	555-2223
Davern	T240C	8344-1846

E-R DIAGRAMS.

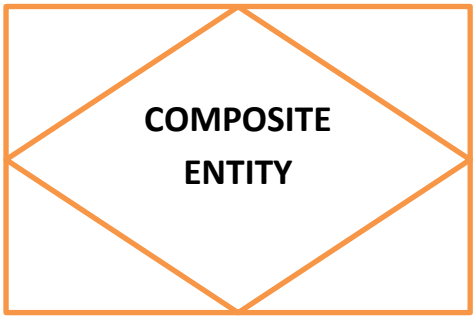
An E-R diagram is a semantic, graphical data model of 'reality'.

A person, place, thing, transaction or event that data is collected and stored about.

Characteristics or properties of an entity (name, address, price, date).



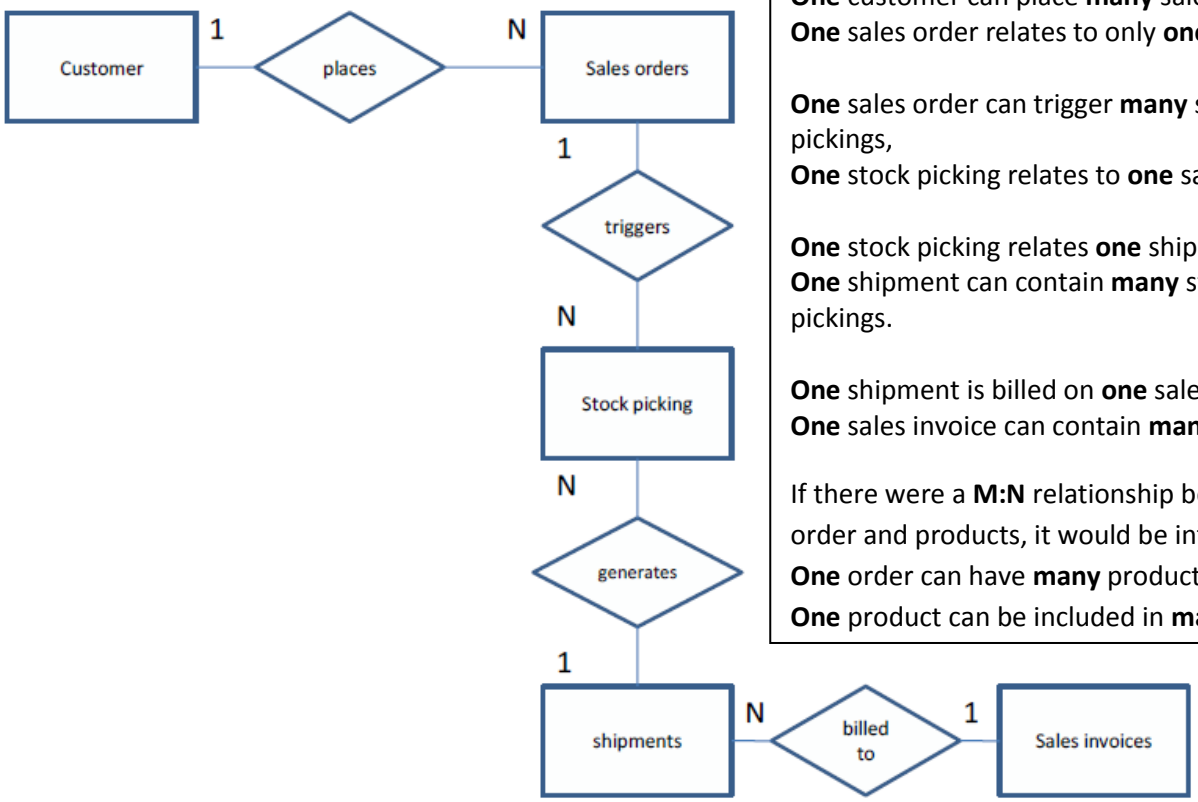
The association between entities (verbs). How the two entities are related.



Represent a relationship between two other entities; removes M:M relationships.

They are a constructed entity, constructed to resolve many to many relationships.

Example of interpreting an E-R diagram.



One customer can place **many** sales orders,
One sales order relates to only **one** customer.

One sales order can trigger **many** stock pickings,
One stock picking relates to **one** sales order.

One stock picking relates **one** shipment only,
One shipment can contain **many** stock pickings.

One shipment is billed on **one** sales invoice,
One sales invoice can contain **many** shipments.

If there were a **M:N** relationship between order and products, it would be interpreted as:
One order can have **many** products,
One product can be included in **many** orders.

"An accounting information system is an accounting information system, they are all the same".
Discuss. In your answer, consider what the objective of an accounting information system is.
An accounting information system captures, records, stores and enables extraction of data that describes the economic exchanges of the company. The data captured provides an abstract of reality. Accounting information systems are not the same. The design choices made by system designers (and accountants) influences what data is captured, when it is captured and how it is available as output to users. The choices made in terms of the entities, their attributes and the relationships between entities will influence the system. Different choices by designers will lead to different accounting information systems being able to meet the information needs of different users. A traditional accounting information system which is based on double-entry manual accounting system typically focuses on capturing financial qualitative data that forms the basis of external financial reports. However, internal users also have growing demand for non-financial data, such as how long between a customer places an order and the goods are sent.
Accounting information systems that capture the who, when, where and what of the system can enable a system to meet the undefined needs of users. In addition to being a repository for transaction data, the design of the system has important implications for how the business operates. Once instantiated in the business, the accounting information system is an entity that can be programmed to perform many automated control activities. The design of the system also embeds the operational rules in the system into the firm's practices.

LECTURE 3

Business process: a set of interlocking activities that work together, across the organisation, to achieve some predetermined goal. Business processes are the contextual environment for the routine economic events reported in a firm's financial statements.

Entities: people, places and things that send, receive or process data. An **internal** entity performs information processing activities in the system of interest. An **external** entity provides inputs to or receives outputs from the system of interest but do not perform any information processing activities in the system of interest.

Data store: resources, events and agents we want to collect data about. Can be paper or electronic.

DATA FLOW DIAGRAMS