

Information Systems

4 Information

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Previously, we saw how Rich Pictures and Data Flow Diagrams help us to visualise how systems work and we took a closer look at business systems. Now we look at the nature of information and how it may be used.

4.1 Data and Information

Here is some data: 1984

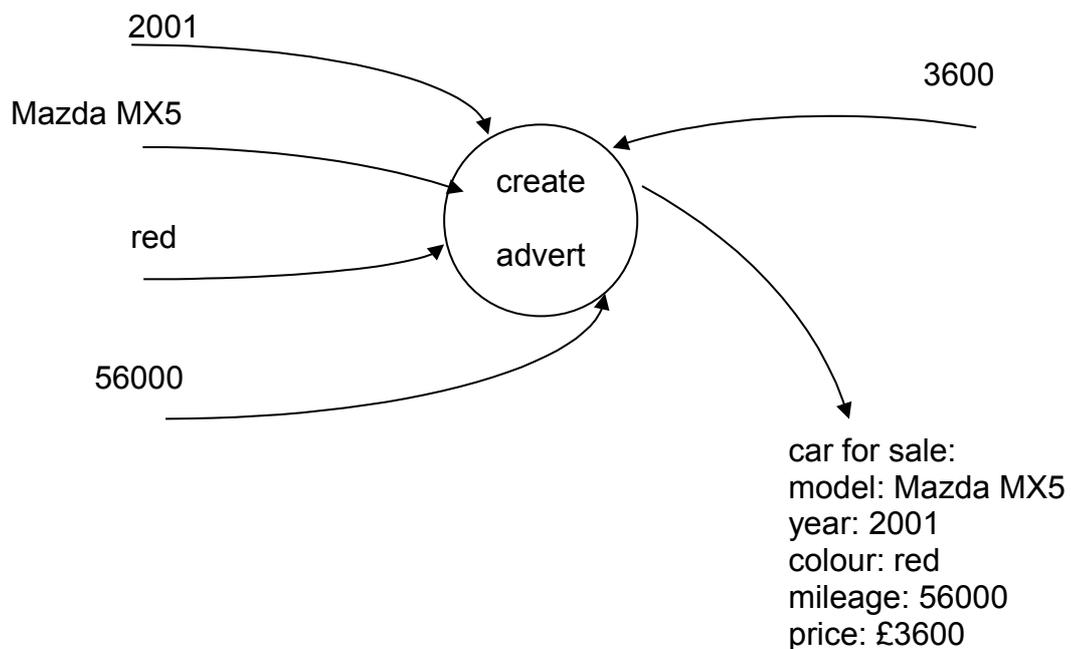
Here is some information: 1984 is the size of the engine in a Mazda MX5 sports car.

Here is some more information: 1984 is the year Katie Melua was born.

Information is data plus context.

Data may be quantitative e.g. 1984 (you can count it) or qualitative e.g. fast, pretty

Data flow diagrams show how data is transformed into information.



4.2 Information and Business

We look again at a college refectory (first described in handout #3: Systems).

Sales - snacks, drinks and prepared foods are offered for students and lecturers to purchase. The most and least popular items are identified. Money from sales counted. Busiest and quietest times identified.

Purchasing - foodstuffs such as potatoes, ... drinks such as tea, ... snacks such as crisps, ... cooking materials such as oils, ... are purchased from suppliers. Facilities such as ovens, ... are purchased, hired and maintained. Suppliers are evaluated.

Manufacturing - chips are fried, ... plates are polished, ... all at the right time. The right workers with the right skills are in the right place at the right time.

Marketing - the right food is made available at the right time, prices are set, refectory signposted, refectory made welcoming and well known for the right reasons.

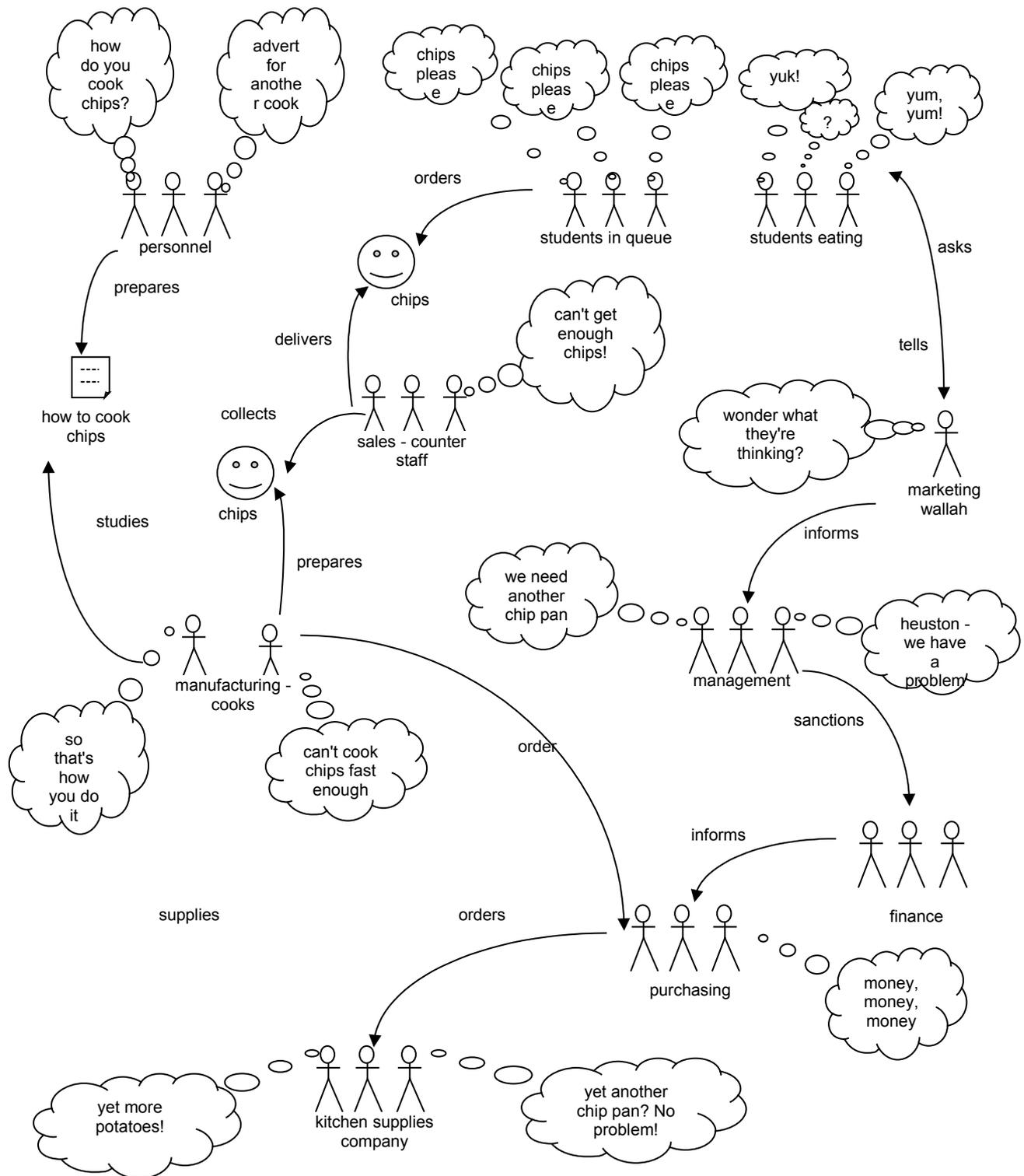
Finance - bills are paid, prices set, wages given, income balanced against expenditure. Cash flow monitored.

Personnel - the right people with the right skills are employed in the right numbers. Training provided.

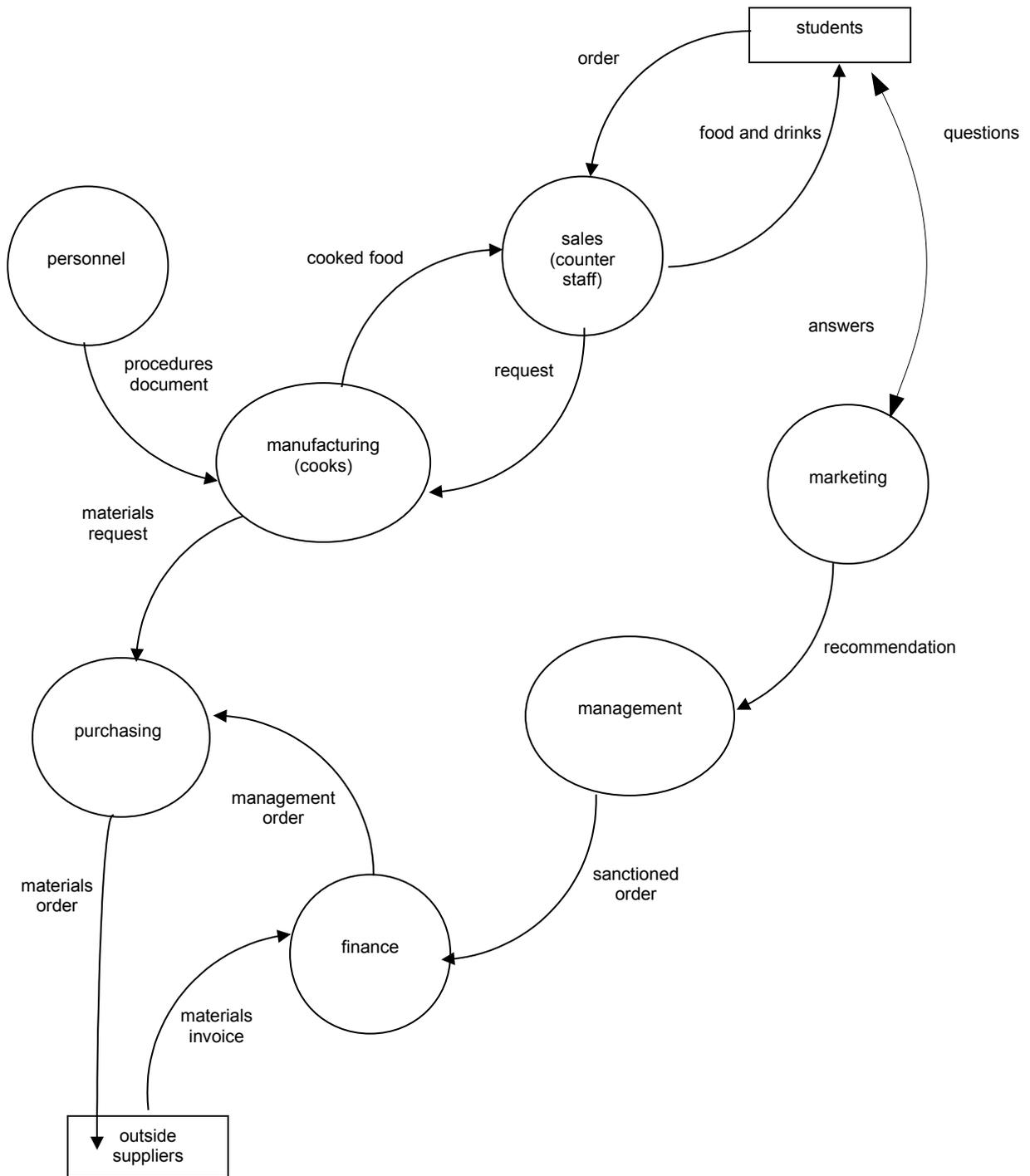
Management - operational, tactical and strategic decisions made.

Each functional area does not work in isolation, each depends on others for reliable, up-to-date and relevant information.

We use rich pictures and data flow diagrams to show the flow of information between functional areas.



How information passes between functional areas in a college refectory



How information passes between functional areas in a college refectory

Students place their order for food and drinks with the counter staff. The counter staff meets the order and request additional cooked food from the cooks if required. If the cooks find they are getting short of essential ingredients they put in an order for more supplies. The purchasing department takes this order from the cooks and passes it on to their suppliers. The suppliers send an invoice to the finance department for payment. Meanwhile, the marketing department canvases the views of students who make suggestions. In the light of their comments the marketing department makes recommendations to the management. The management either ignores the recommendations or passes on the order for additional resources to the finance department. Here we use department to mean functional area.

Of course, a lot more detail could be added, e.g. payments by students for their food, each functional area's connection with management. And different refectories do things in different ways. The point is that the right information is passed in the right way at the right time to the right functional area.

4.3 Purposes of Information

The essential purposes of information include:

	purpose	explanation	for example
•	operational support	monitoring & controlling activities	identifying the times when the refectory is most heavily used and consequently providing sufficient staff
•	analysis	to identify patterns or trends	identifying the most and least popular items of food
•	decision making	operational - day-to-day tactical - how changes are implemented strategic - what changes to be made for improvement	producing duty rosters for staff employing the right builders to make the right alterations to increase seating capacity deciding to increase seating capacity by breaking into an adjacent room
•	gaining commercial advantage	beating the competition	setting prices that at least match the local competition providing food that students want to eat providing an environment that students find welcoming at any time.

4.4 Characteristics of Information

Essential characteristics of information include:

	characteristic	explanation	example
•	valid	falls within pre-defined limits	term dates are for the current year (and not for last year)
•	reliable		term dates provided by College management, who are not usually wrong
•	timely	available with the minimum of delay	out-of-date information is of no use to anybody (except historians)
•	fit for purpose	does the required job	the order clerk needs to know exactly how many kg of potatoes to order
•	accessible	easy to get to and easy to use	till operators need current prices at the push of a button on a touch screen
•	cost effective	does not cost too much in time and money to provide	automated records of sales made
•	sufficiently accurate		money collected for sales made balances with till records (within agreed limits)
•	relevant		order clerk does not need to know about guns supplied to the British Army when he or she needs to order buns
•	appropriately detailed	too much detail hides the essentials, too little detail fails to convey the important facts	
•	understandable	each different kind of user finds the information for them to use easy to understand - what might be appropriate for a senior manager might not be appropriate for a kitchen hand	if managers cannot understand the report on refectory usage statistics, the report is a waste of time

4.5 Exercises

Visit both <http://www.naim-audio.com/> and <http://www.caterham.co.uk/>. For just one of these companies:

- a. construct at least one rich picture that describes what the company does
- b. list and describe what could be the company's functional areas
- c. construct at least one data flow diagram that shows the flow of information between the functional areas listed in (b) above, as well as the flow of information to and from outside the company
- d. describe four essential information characteristics that help the company maximise profits and minimise costs.

Remember to explain your diagrams in detail.

Bibliography

None

Next we focus on management information systems