

Supermarkets often gather information about their customers and the purchases that they make. This information can be analysed by the supermarket and other companies for a range of purposes.

Some of the information is collected at the checkout, where the identity of the person is read from a loyalty or payment card using RFID (radio-frequency identification) and a barcode reader is used to identify the products being purchased.

By analysing the purchases that a shopper has made, it might be possible to identify such things as whether the shopper has children, is pregnant, or lives in a house with a garden. Other types of analysis might include the amount of money a customer spends, the times that they choose to shop at and the differences in shopping habits of different groups of shoppers.

Describe the principles of operation of the hardware used to collect the information and discuss some of the ethical and legal issues that might arise as a result of the capture and processing of this data.

In your answer you will be assessed on your ability to follow a line of reasoning to produce a coherent, relevant and structured response.

[12 marks]

RFID

- The RFID tag would be inside the loyalty or payment card
- When the RFID scanner scans the tag at checkout it sends an electromagnetic wave to the tag
- The antennae in the tag picks the waves up and uses it to induce power into the chip
- The chip contains the identity of the person using the card
- The antennae sends back an electromagnetic wave to the reader that picks it up.
- The signal sent back ~~contains~~ contains the ID of the person

Barcode Scanner

- A barcode reader is used to scan barcodes
- A mirror reflects a laser onto the barcode
- Black parts of the barcode absorb the light while white parts reflect it back
- The light reflected back into a photodiode that converts light into a digital signal
- The black parts that don't reflect light act as 0's and the white parts that do act as 1's
- This is how the barcode reader identifies which product it is when scans the barcode

Ethical Issues

- ~~Some~~ people
- It may be concerning to people that private information like ~~how~~ money spent is ~~being~~ ~~here~~ and children/families is recorded. To many people they would like to keep these things private
- Do most people know their data is being collected
- Maybe it would be better if they had to approve of their data being collected

Legal

- As there is a lot of personal information collected if this data is sold to certain people it could put people at risk due to their personal information being leaked/used. This could cause some legal issues as it should be the responsibility of the supermarket to keep this data safe.

Turn over ►