

Supermarkets often gather information about their customers and the purchases 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

Radio-Frequency Identification works by a microchip and a wire which works as an antenna, when the RFID card is used put near an RFID scanner the antenna has a current induced into the wire which powers the chip which broadcasts the information, in this case it would be the card details.

Barcode Reader

A Barcode reader works by projecting light onto a barcode, the black lines absorb light, whilst the white lines reflect, the reflected light is detected by photo receivers which then output a 1, the receivers which didn't get any light don't output anything.

This forms a binary pattern which is used to identify the product.

When these devices are used in tandem, they can make customers to the products bought, and can determine characteristics about the customer such as if they are pregnant.

Legal issues

When storing data about customers, the supermarkets have to comply with the data protection Act which regulates that data stored must be secure, relevant and not excessive. ~~As a result, that that super~~ ~~they must only gather required data and it must be~~ The customers also have a right to request or remove their own data which the supermarkets must comply to.

Ethical

Storing data has many ethical issues such as ~~targeted~~ targeted advertising, targeting ~~customers~~ customers with specific advertisements may cause them to spend more than they can afford causing financial strain. Storing too much data also has privacy issues as customers may not want ~~to~~ or know that data is being collected.

Turn over ▶