a) As error detection is imperative in this operation, two methods of detection can be utilised:

- during transmission of data, parity bits can be used to detect errors in bytes sent across their communications links. Using a start and stop bit, each byte can be detected for errors by checking their bit patterns.

- a 32 bit CRC (cyclic, redundancy check) can also be used, and provides 99.99% error detection. The number of bits of the data is divided by a pre-set numeral and the remainder of the division is **used** to verify the CRC done at the source to the CRC done at the destination.

b) Two new trends that can be utilised by Madison include :-

- using data about customers to send email or snail-mail containing advertisements

and/or offer to promote spending

- another trend involves using data collected from purchases to look for trends of spending in different stores, and from what income and age groups those spending patterns originated. This can be used by Madison to market products differently in different stores appropriate to the data collected.

c) the messaging issues relevent to the situation are mainly ethical. It is un-ethical for employees to talk about another employee in a low manner. It is especially un-ethical to do so in a company email system where anyone could gain access to the email and show the target of un-ethical conversation.