Real-time information processing is a management slogan that is spreading across organizations like bush fire. Some companies have implemented the use of real - time information processing and have reaped from what they sowed. The study was conducted to determine: the types of real - time information processing used by supermarkets in Nairobi, Kenya; the benefits of real - time information processing; and lastly to establish the relationship between real - time information processing and supply chain optimization. The research adopted a descriptive cross - sectional survey of supermarkets operating in Nairobi, Kenya. The descriptive approach was used to try to find out the types of real - time information processing technology used in the supermarkets and the benefits of real - time information processing. A sample size of 50 respondents was drawn from a list of 105 supermarkets. Data was collected from the field through use of questionnaires and then analyzed using SPSS and presented in tables and figures. The study revealed that all supermarkets in Nairobi, Kenya, use real - time information processing technology with the following technologies in use: barcodes, mobile phones, internet, RFID, and GPS. The study indicated that two major benefits are accrued through the use of real - time information processing. These are: improved inventory management and increased supply chain visibility and reduction in labor costs...