

Problem: Flash Sale

The tradition of massive **flash sales** at “**brick and mortar**” retail stores is spreading around the world. Originally these big sales were scheduled in the United States to target consumers at the start of a holiday season and on a day they did not go to work (e.g. Black Friday sales). Now, nearly 20 different countries have some form of flash retail sales in attempts to have consumers shop locally and not go online to purchase products.

During these flash sales, stores advertise huge discounts on sale items, along with expanded operating hours (usually opening very early in the morning), to attract customers hoping these customers will buy more than just the discounted products.

At the start of these sales, numerous eager shoppers gather at the store entrance to rush in at the store’s opening, grab their desired item(s), run to a cashier to quickly make their purchases, and then leave to perhaps travel to another store for more deals. In the process, the over-agitated shoppers are likely to **stampede** and create “human traffic jams,” sometimes hurting each other and damaging the surrounding goods. Additionally, some shoppers may not get an item they want due to the item being sold out when they arrive at the item’s location in the store.

In preparing for the next flash sale, the manager of an electronic and appliance retail store has asked your team for assistance. The manager is planning a store renovation and has the opportunity to reorganize the layout of the store. The store sells a wide variety of products to include televisions of all sizes, as well as small to large electronics (e.g. cell phones, cameras, home theater equipment) and small to large appliances (e.g. coffee makers, vacuum cleaners, washing machines, gas and electric cooking stoves). The manager has provided you a list of store departments and major categories of products offered in the store beginning on page 5, as well as a list of some of the actual items offered during the flash sale to include flash sale pricing, availability, and consumer rating data (See **Attachment**: StoreData_IMMC.xls).

The store manager wants to minimize levels of damage to products and believes a store's floor plan and the layout of different departments and categories of products on that floor plan will help to meet these objectives. **Figure 1** provides an example of a possible floor plan. A larger version of the floor plan is on page 7.

Requirements

1. The Event.

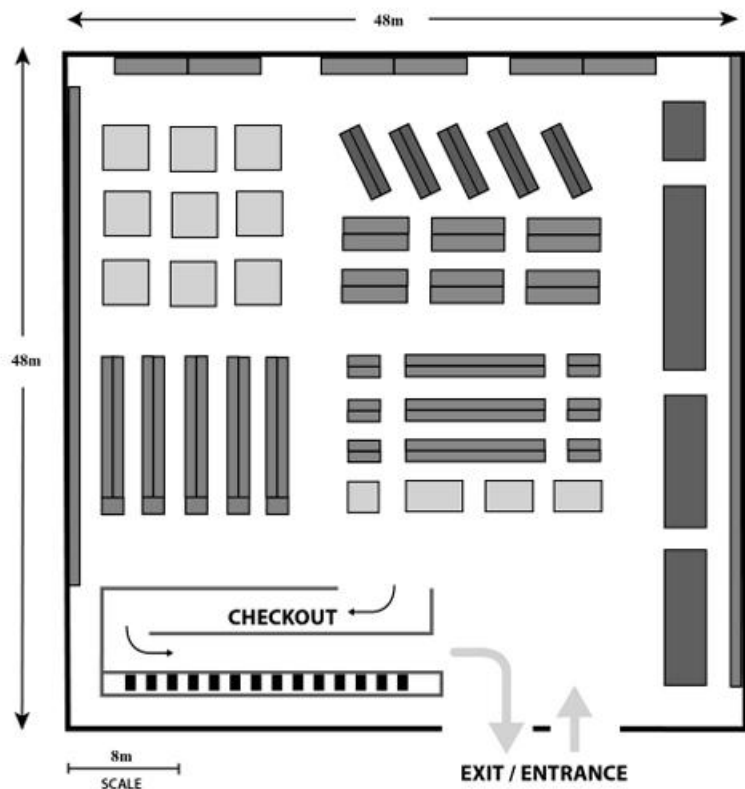
- a. Describe the various ways in which products at the store might be damaged during the sale event due to careless and accidental actions of the customers.
- b. Consider the items included in this flash sale event. Which sale items do you think will be most popular (most desired) by the shoppers and why?

2. Store Layout.

- a. Use your responses to Requirement 1 to identify and describe the store layout factors that impact possible damage to products and other measures you deem important during a flash sale event.
- b. Use the factors you identified in part 2.a. to develop a mathematical model or models to quantitatively predict both the behaviors of the flash sale customers that potentially result in damage to products in the store and the level of that damage. Your model(s) should incorporate floor plan characteristics, location of departments, specific flash sale products, and arrangement of cashier stations.
- c. Based on your factors and model, discuss the optimal locations of the store's departments and the most popular/desired sale items. Indicate these locations on the floor plan in **Figure 1**. In other words, label the various areas of the floor plan with your team's choice for the locations of departments and displays of the most popular sale products.
- d. Using your analysis and the model you developed, create and evaluate a new and better floor plan for this flash sale scenario. The store dimensions, scale, location of the entrance/exit, and the items for sale remain the same, but your team can now create its own layout. Justify why your floor plan is better than the one given in **Figure 1**. (Note: Your new floor plan can be hand-drawn or computer created. Include an electronic version or a photo of your floor plan in your submission.)

3. Letter.

Write a one-page letter to the store manager supporting your floor plan layout and discussing any additional strategies for a successful flash sale.



Store Floor Plan

Figure 1: Store Floor Plan Layout

Your submission should consist of:

- One-page Summary Sheet
- Table of Contents
- One page letter to the Store Manager
- Your two floor plan layout diagrams (Requirements 2.c. and 2.d)
- Your solution of no more than 20 pages (A4 or letter size), for a maximum of 25 pages with your summary, table of contents, letter, and floor plans. Note papers must be typed with a readable font of at least 12 point type.

Note: Reference List and any appendices do not count toward the page limit and should appear after your completed solution. You should not make use of unauthorized images and materials whose use is restricted by copyright laws. Ensure you cite the sources for your ideas and the materials used in your report.