



Re-creating inventory

Creating a new inventory model for KFC

Through this project we research and explore the current inventory model used by a local Kentucky Fried Chicken store. We critique the model, discover the problem source and create a computer based solution to their inventory problem. The idea is to provide KFC with a solution that will save them for unnecessary losses.



Contents

Introduction	2
The current model	3
The Problem.....	3
Proposed Solution.....	5
Solution Details	6
Inventory data entry:	6
Daily use:.....	6
Low Supply and threshold:.....	7
Strategy.....	8
Future Problems	9

Introduction

Kentucky Fried Chicken (KFC) is one of the biggest fast food chains in the world. KFC is a good example of a corporation with a set hierarchy; they are a bureaucracy (Weber) with strict rules and regulations at each level.

Corporate Management: They are the highest level. They make the most important decisions based on the information they get from the lower levels.



State, District and Area managers basically manage their designated areas and report to their seniors. Their entire task is to facilitate information and they act as a bridge between higher management and lower level management.

Restaurant Managers: These managers are responsible for a local store and its day to day running. They have to create the employee schedules, count and order inventory, keep details on sales and manage employees.

Customer Service: They tend to the customers, take their orders, and clean the dining area.

Food Service: They prepare the food and clean the kitchen area and other utensils.

Other employees: This varies from store to store; they are primarily used as back up employees. They assist the other workers with their tasks.

The current model

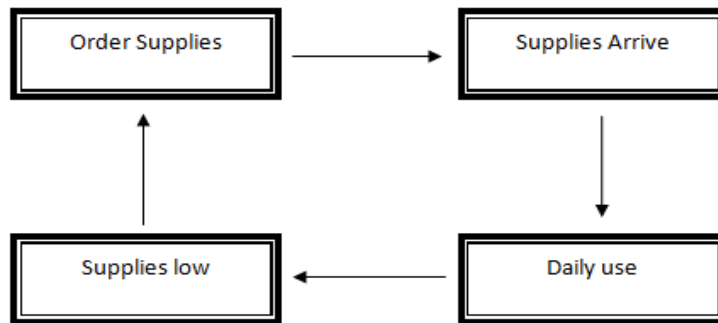


Figure 1: Inventory model

The current inventory model is simplistic in its approach. You order items, your order gets shipped to you, you count inventory every day and keep track. If you are running low on something, you order it. Thus you maintain the store and it's functioning with relevant ease (diagram above).

The Problem

Even though the model is simplistic, the store does report losses due to incorrect inventory count. On closer analysis of the model (Figure 2), we discover that there are areas within the model which are error prone.

Lowest This area is out of the stores control. If there is an error in these areas the store is not held accountable.

Low The low error zone is almost unavoidable. Example: An employee accidentally drops food on the floor, the cook accidentally over cooks something, etc. The store takes these types of errors into consideration when pricing products and so we can almost ignore these.

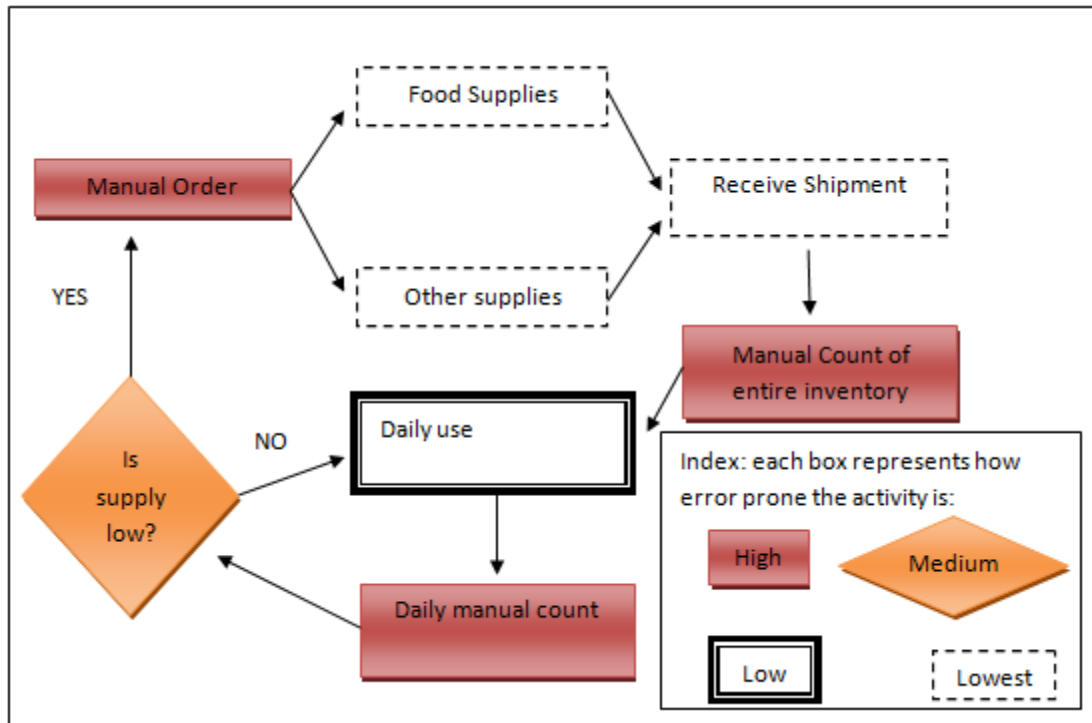
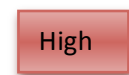


Figure 3: Inventory Model with risk analysis



Medium errors affect the working of the store directly. Frequently due to lack of communication and bad inventory counts, the store will run out an item (chicken, oil etc). Under these conditions, the store has to shut down temporarily till a solution can be found. It has the potential to lose customers.



This primarily happens when the reported inventory count does not match with estimated inventory count. Under these conditions, the store has to report a loss and higher up management gets involved. This could result in employees losing their jobs and the store being shut down.

The key problems that need to be fixed are:

- **Manual Counts:** KFC has a really large inventory. With multiple items to count, it is easy for people to make mistakes.

- **Inventory count is not Continuous:** The inventory count is not very continuous. Currently the manager does an inventory count at the end of the day. Because of this, at any given point, the store could run out of a product.
- **There is no Threshold:** A manager has to estimate when the supplies can be considered to be low. If the manager makes a miscalculation somewhere, the store is at risk. Both over and underestimation costs the store (too little food runs out fast, too much rots and needs to be thrown out).

Proposed Solution

Their original model was designed to work and be efficient. The problems are primarily caused by human error. This model was created based on “The Principles of Scientific Management” (Taylor); the needs of people were ignored.

Thus for the scope of this project, we are going to stick with the current model and try and enhance it in order to reduce the errors. The idea is to help the employees and managers by giving them tools that better enable them to do their tasks. A solution to the given problem may be to create an automated inventory tracker system. This automated tracker will perform these tasks:

- **Assist data entry**
- **Keep track on all items**
- **Warn the manager if an item has reached the threshold zone**
- **Help the manger order items**
- **Every KFC store has the same system; thus better records are kept (future enhancement)**
- **Stores in the same area can communicate better with each other for emergencies (future enhancement).**

Solution Details

Inventory data entry: For convenience, let us start with the inventory entry process. Assume that a shipment has arrived.

When an employee unloads a box, a barcode scanner (Figure 3) will be used to scan the barcode of the box (Figure 4). This barcode contains relevant information such as item number, the amount, etc. The barcode scanner is connected to a database which knows how many products were ordered. It keeps a track of what has been scanned against what was



Figure 3: A Bar code scanner

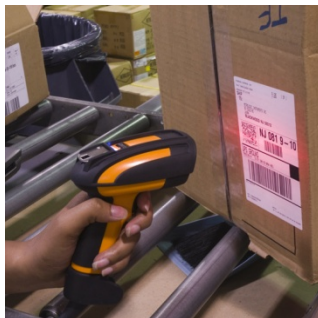


Figure 4: Scanning a bar code

ordered. If a count does not match, it warns the manager (Figure 5). With this system, employees and managers do not have to count and record the numbers manually. The hard part of the process is being done by a computer application.

No	Name	ID number	No Ordered	No Received
1	Chicken	112354	20	14
2	Plates	124578	100	100
3	Boxes	147859	50	47
-	-	-	-	-

Figure 5: The application shows the manager where the errors are

Daily use: The problems with day to day inventory were that it was not continuous and complete counts are error prone. Once again to reduce this error, we make the process easier by using the bar code scanner. In this case we scan an item while taking it out of the inventory (Figure 6). This way, every time an item is being used, the inventory is updated. Through this process, the entire inventory count process is more continuous. Instead of having to count all items together

at the end of the day, the employees now only have to scan out the item(s) before they use it.

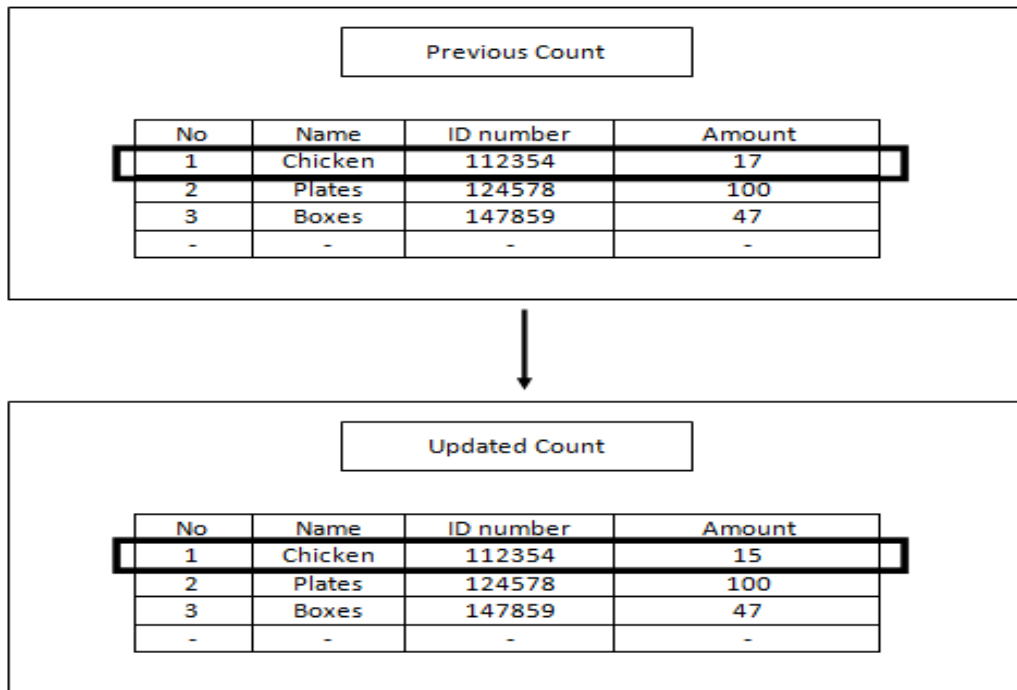


Figure 6: The inventory keeps updated counts.

Low Supply and threshold: The automated tracker has a threshold value in its database. This value can tell a manager if an item is low (Figure 7).

We can use this value again to assist the decision making process. The threshold value can tell a manager the estimated

Supply Status and Estimated Use					
No	Name	ID number	Amount	Status	Estimated use
1	Chicken	112354	15	LOW	3 Per day
2	Plates	124578	100	Normal	1 per day
3	Boxes	147859	47	Normal	½ per day
-	-	-	-		

Figure 7: Status and estimated use of items

usage of a product. Based on this value, the manager can make a better assumption on how much to order.

Strategy

The idea behind this project is to create an Information system that automates the inventory counting process. The computer application does not work as an expert system. It tries to work with the employees and make sure they do not make mistakes. This application is designed to aid them when necessary. All their other daily activities remain untouched. From a manager's point of view, the application tends to informate. It tries to aid the manager in his decision making about what to order and when. It just gives rough estimates on what could be bought. Thus this system informates and represents at the same time in order to expedite the shipping process.

In the original work flow (Figure 3), there were multiple areas that were error prone and caused losses. As mentioned in the solution details, we address the error prone zones and reduce the overall risk from each of the sections. Obviously we are not able to get rid of errors entirely but we can considerably control it (Figure 9). The process is more automated and convenient. This system does not replace any current employees; it attempts to make their jobs easier. This way the store can save money and function better.

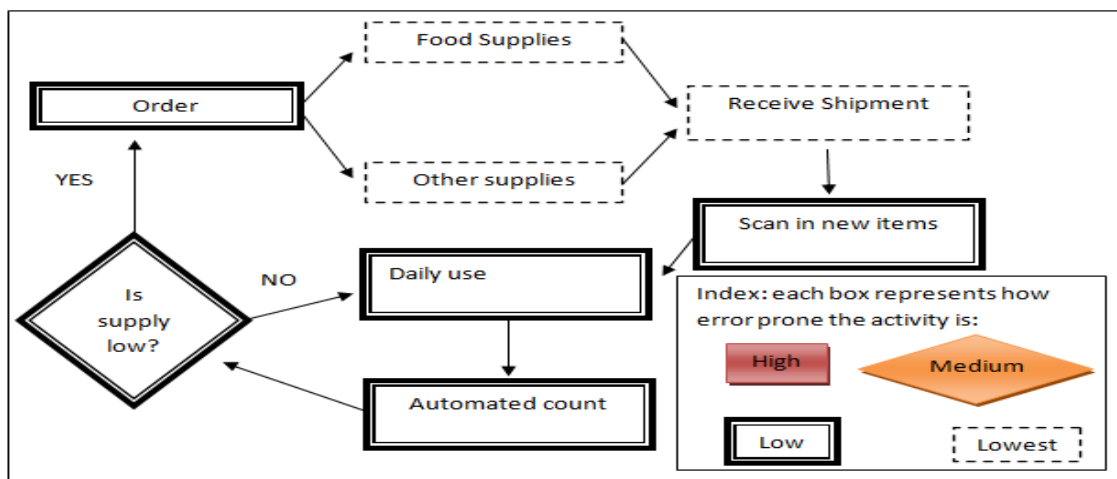


Figure 9: Inventory Model with risk analysis after implementation of automated tracker

For future considerations, we have to think about what consequences this system may have on the company. Also if this system helps the store, it can be implemented in other stores. This way the area managers would know exactly what the stores are doing. The upper management could even use the data to make better marketing strategies. Overall, this inventory system has the potential to save KFC a lot of manual labor and money.

Future Problems

Naturally when a new system is implemented, unforeseen circumstances tend to crop up. It is impossible to account for all possible situations but a good system tries to foresee problems and have backup plans for them.

- **Server Crash:** If the server needed to update information is down, there will be manual sheets that the employees fill out. Once the server is up again, the data can be entered by the manager.
- **Scanner Gun malfunction:** There can be a back up scanner gun which the employees can use. If not, they can use a printed out sheet of the supplies and manually mark off supplies. Then the manager can once again enter it into the computer.
- **Database Crash:** The database will be backed up daily. In case of a crash, it will revert to the backed up data. If some data has gone missing, the store will have to scan all items in order to get the database updated.
- **Training:** Employees will have to be trained to use the scanner guns. This should not be a big issue. The interface for this application will be simplistic. They either select to enter items into the database or take it out. The manager will have to be trained to read and use the database.

- **Evaluation:** Since this is meant to help the users/managers, it is imperative to have a feedback system through which they can post questions and concerns about the system. It will be kept anonymous to get back honest feedback.

Conclusion

The automated tracker system is designed to aid managers and employees. It was created by asking them what their problems were and what they thought would be helpful for them. By using the methods of representation and informing, we were able to create a compelling model which aids the employees. If this system helps the local KFC here in Bloomington, it can be further expanded upon and spread all over the country. Other problems may arise in the near future but since the application is meant to be adaptable, these issues can be dealt with appropriately when the time comes.