SUPPLY CHAIN SETUP PROCEDURE

This software helps the instructor or administrator to set a four-stage serial supply chain under different settings/parameters and evaluates the same by using various performance measures.

Super Admin Login

The screenshot of Superadmin login page of Supply Chain Role Play Game is given in Figure 1. This is Gmail login page.
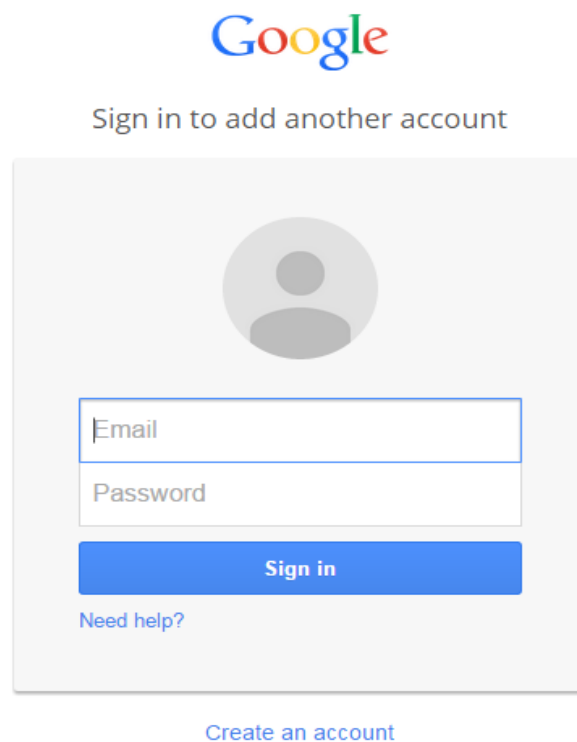

Fig.1. Screenshot of Super admin login page

Enter the user name, password and then click on Sign in button. It will open the admin Gmail Account as shown below.
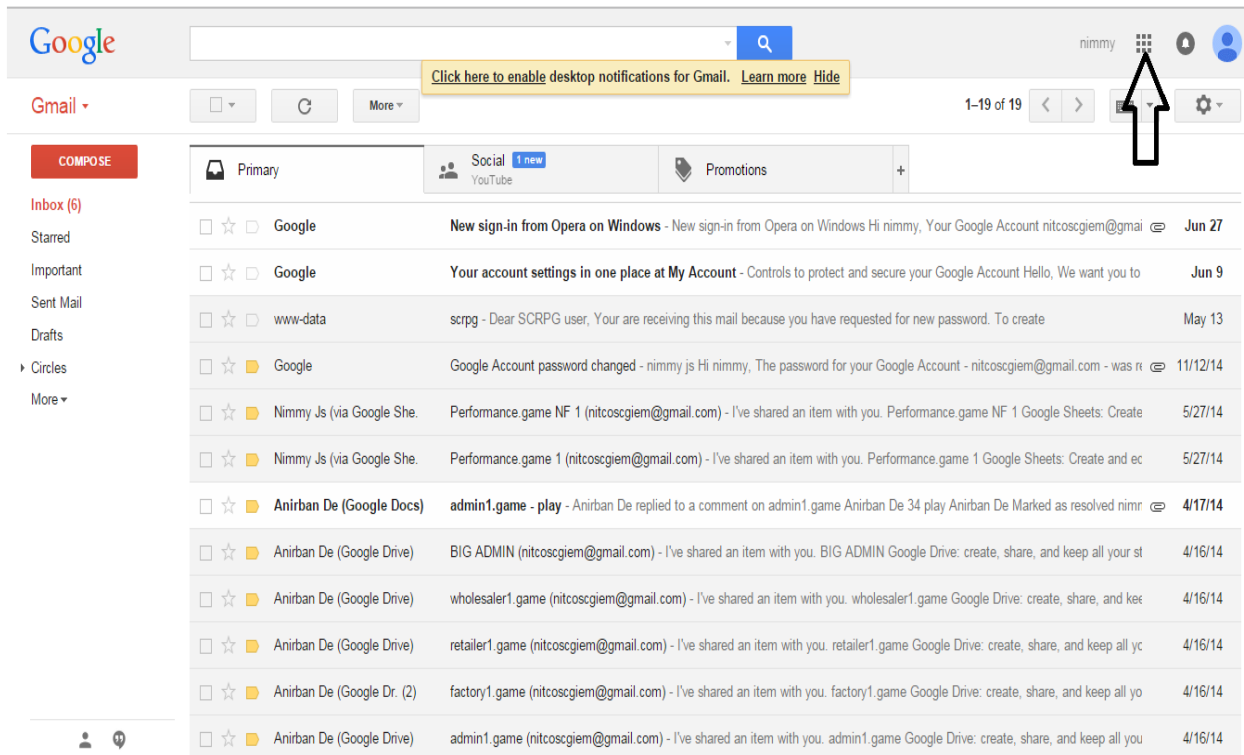
Fig.2. Screen shot of administrator Gmail account

Figure 2 shows the Super admin Gmail account. Now click on icon which is indicated by arrow, one sub window will be open as shown below.
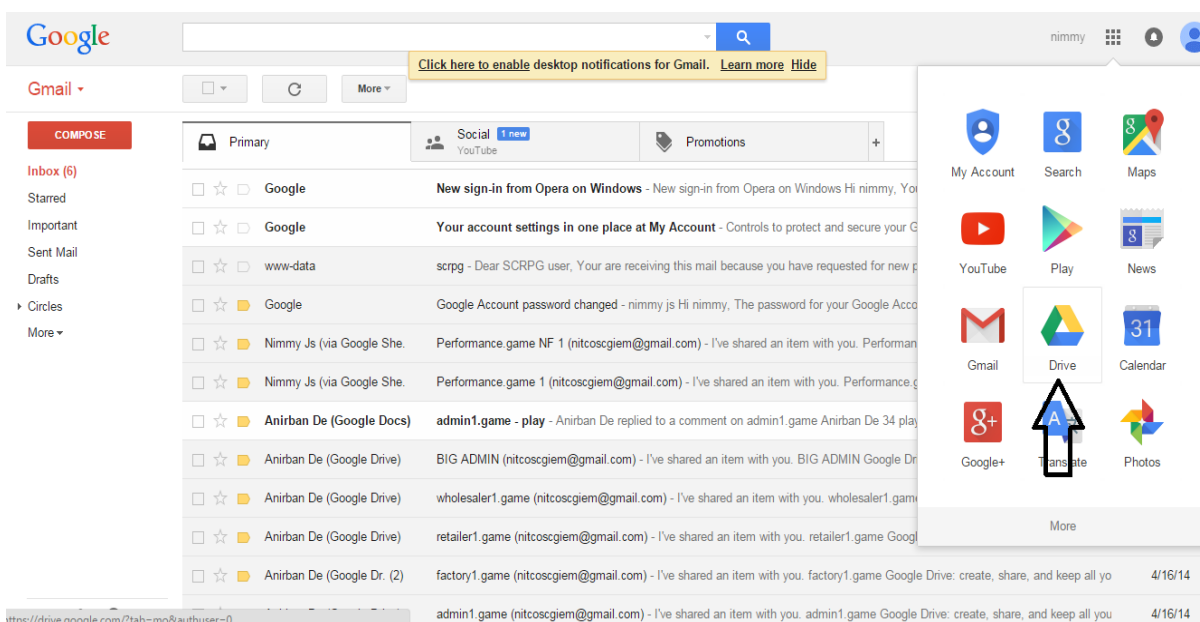

Fig.3. Screen shot of administrator Gmail account for access of Google Drive

In Figure 3, The admin has to click on Drive option in sub window in order to open Google drive of Super admin in new tab as shown below.
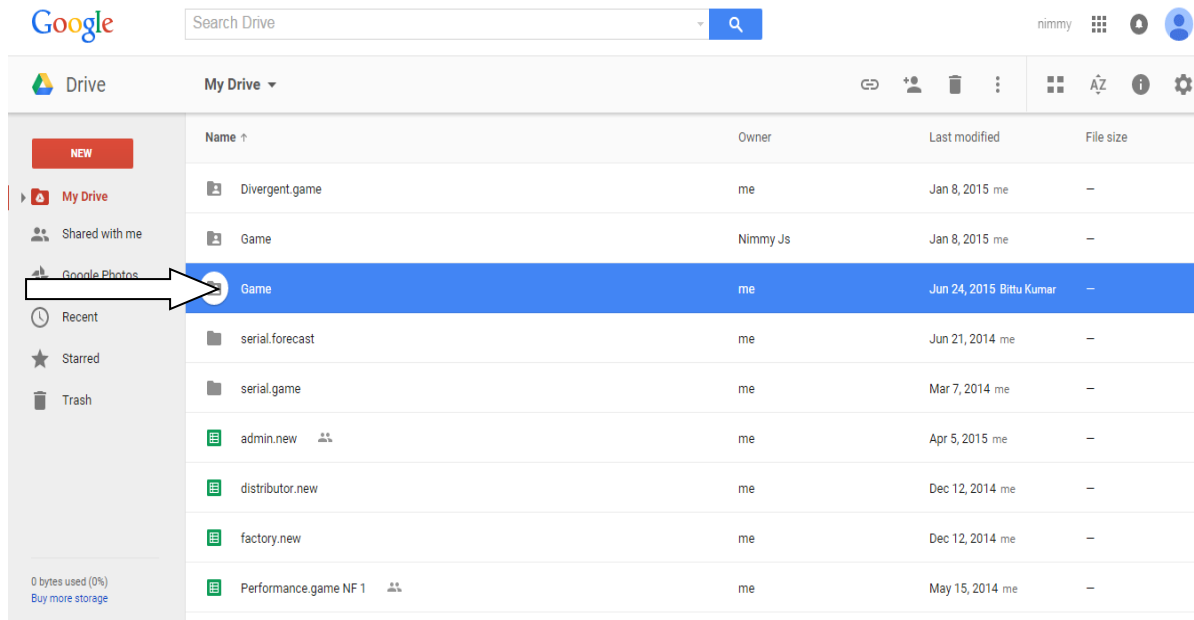

Fig.4. Screen shot of Super admin Google drive folder

Figure 4 shows the Super admin Google drive window. The Drive may have a number of saved or shared folders. The game folder which is indicated by arrow is the folder for Supply Chain Role Play Game using Google Spreadsheet. By clicking on the Game folder the corresponding window will be visible to the super admin.
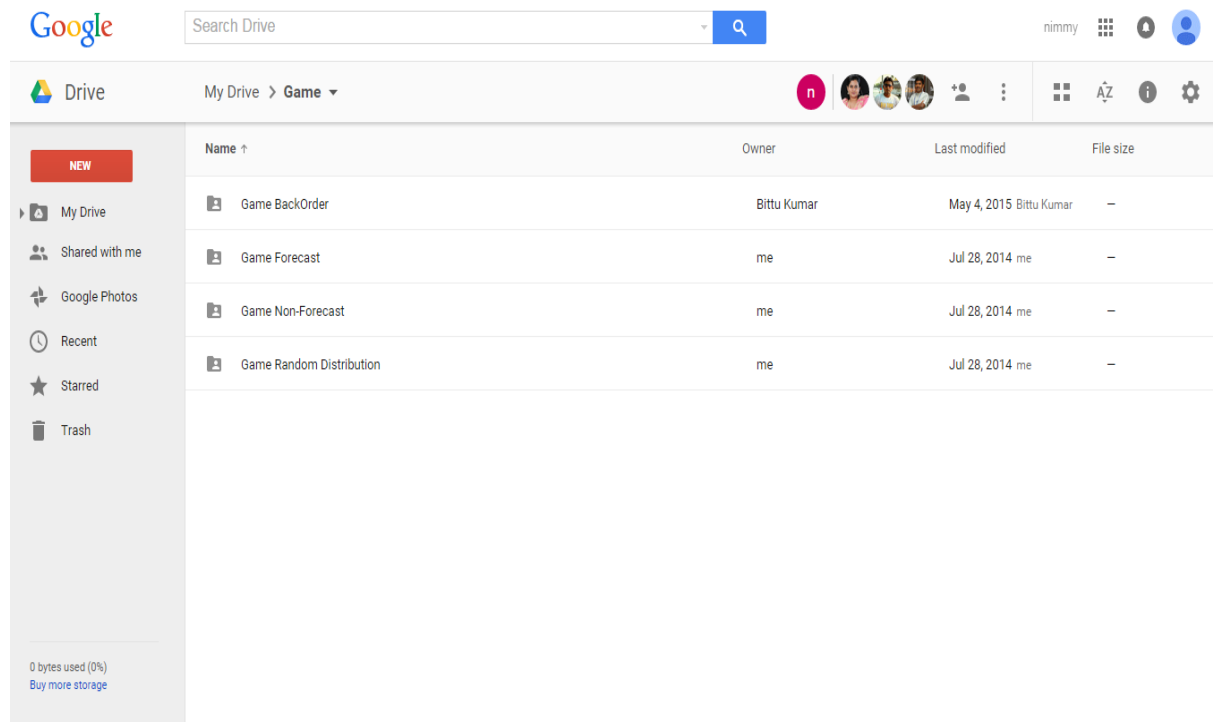
Fig.5. Screen shot of game type in super admin Google drive

In Figure 5, the folders in the Game folder are based on the different types of Game available such as backorder, forecast, non-forecast. By selecting the different folders the super admin can activate the corresponding game for which he wants to set the game. Suppose he/she wants to do game set up for backorder type game; Then he/she has to open the Game Backorder folder, the next window will be as shown below.
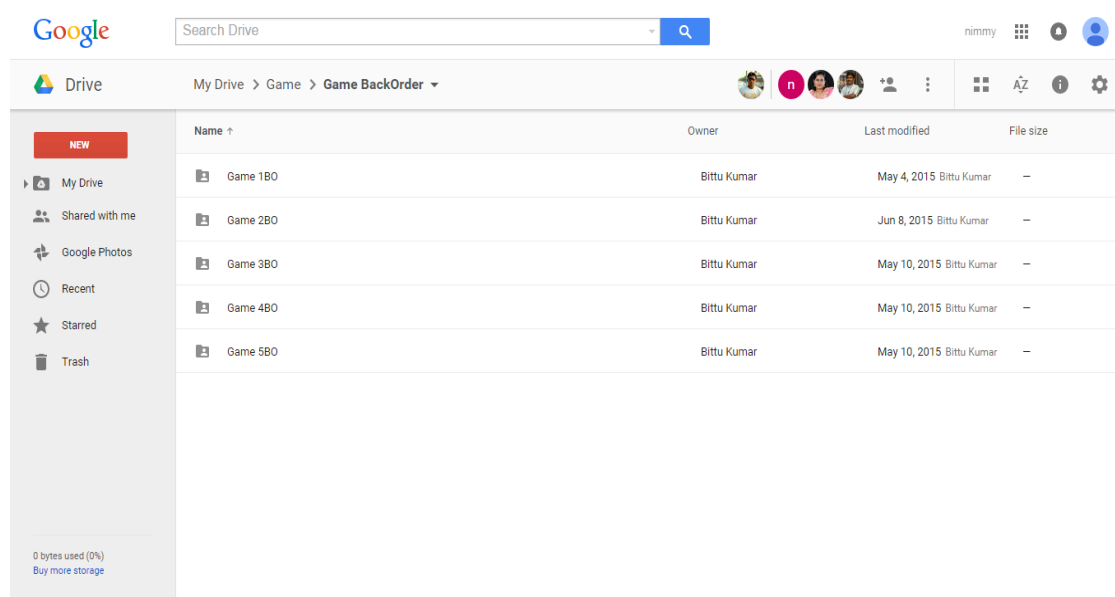

Fig.6. Screen shot of Backorder game type in super admin Google drive

There are 5 individual games available on the backorder folder. For each game there will be 15 teams and an admin. Admin will be the one who will manage and control each game. Here the super admin has to permit individual admins to share the corresponding sheets to the players and then for that the super admin will share each game folder to the corresponding admin's Gmail account. Inorder to share the folder the super admin has to right click on the game folder; one list box will appear as shown below in Figure 7.
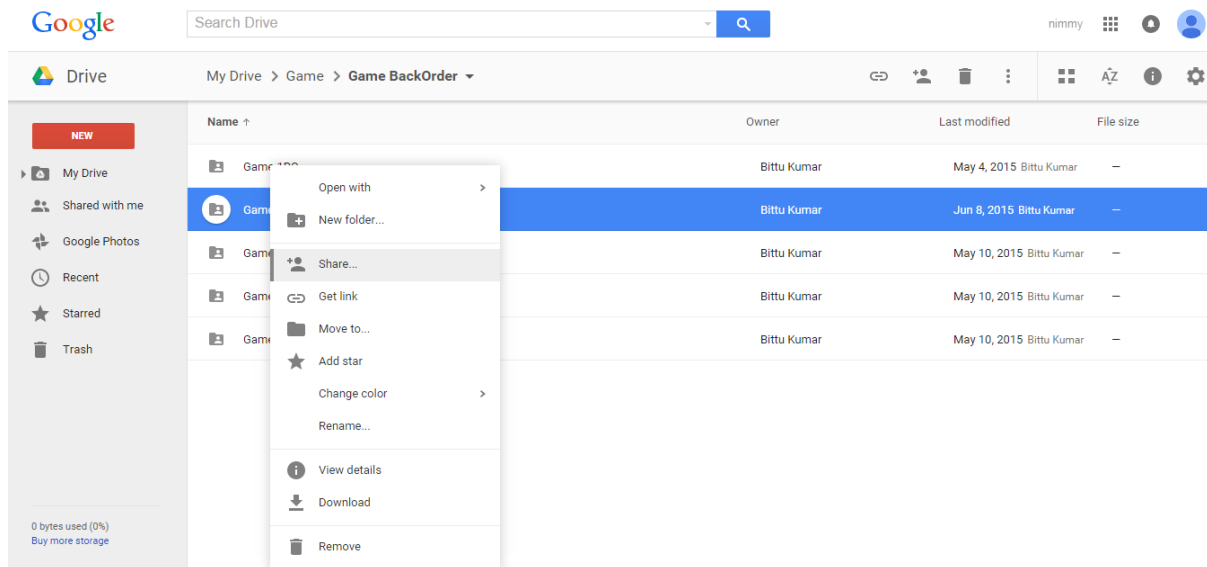

Fig.7. Screen shot of Backorder game type in super admin Google drive

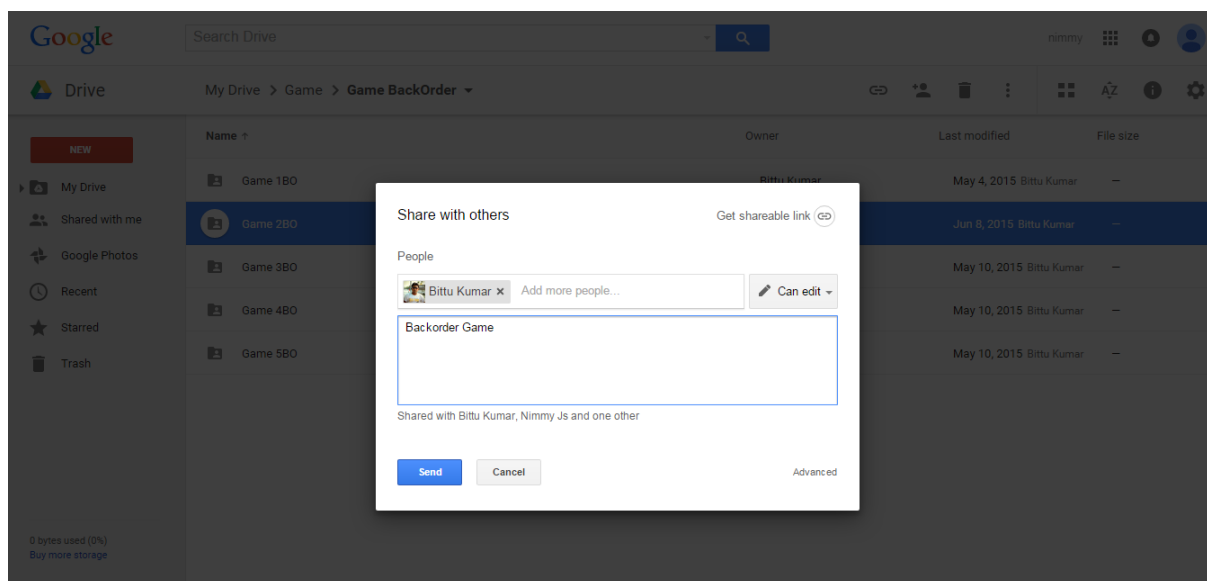As soon as the admin clicks on the share icon a window appears as shown in Figure 8.

Fig.8. Screen shot of share page to admin in super admin's Google drive

Figure 8 shows one sub window, here super admin has to enter the admin email id and game type before clicking on to the send button. After click on send button this folder is shared to admin.

Admin's Gmail Account

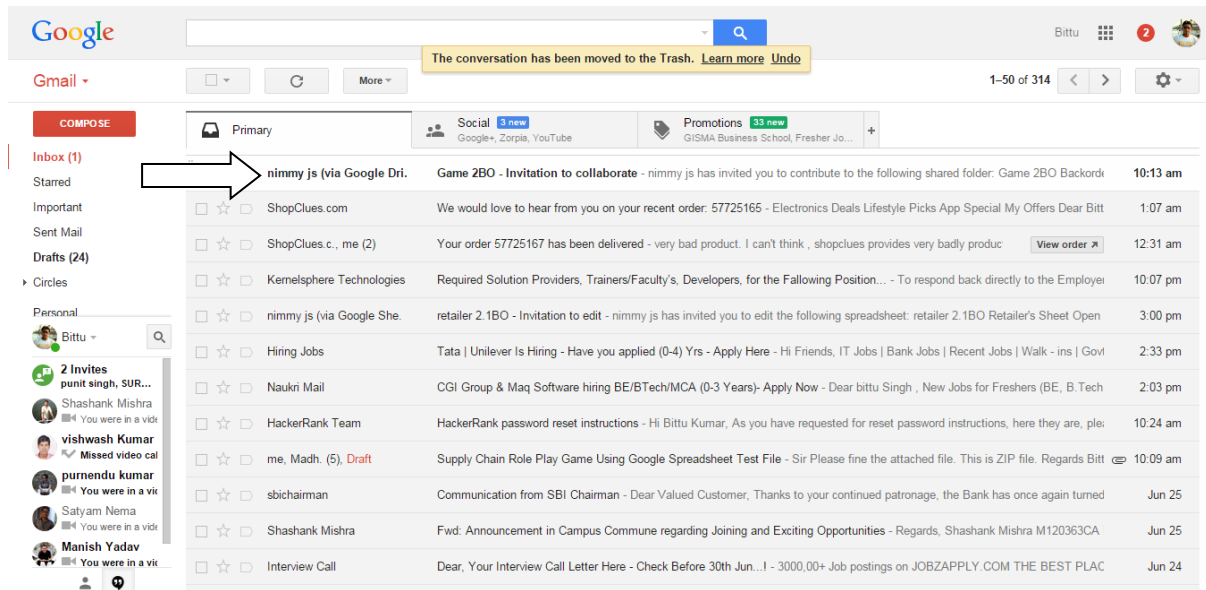The screenshot of admin's Gmail account page is given in Figure 9.

Fig.9. Screen shot of admin's Gmail account

As soon as the super admin shares the folder an email is send to the admin as an invitation to collaborate. Here with the help of this email the admin can directly access the folder that has been shared to him/her.
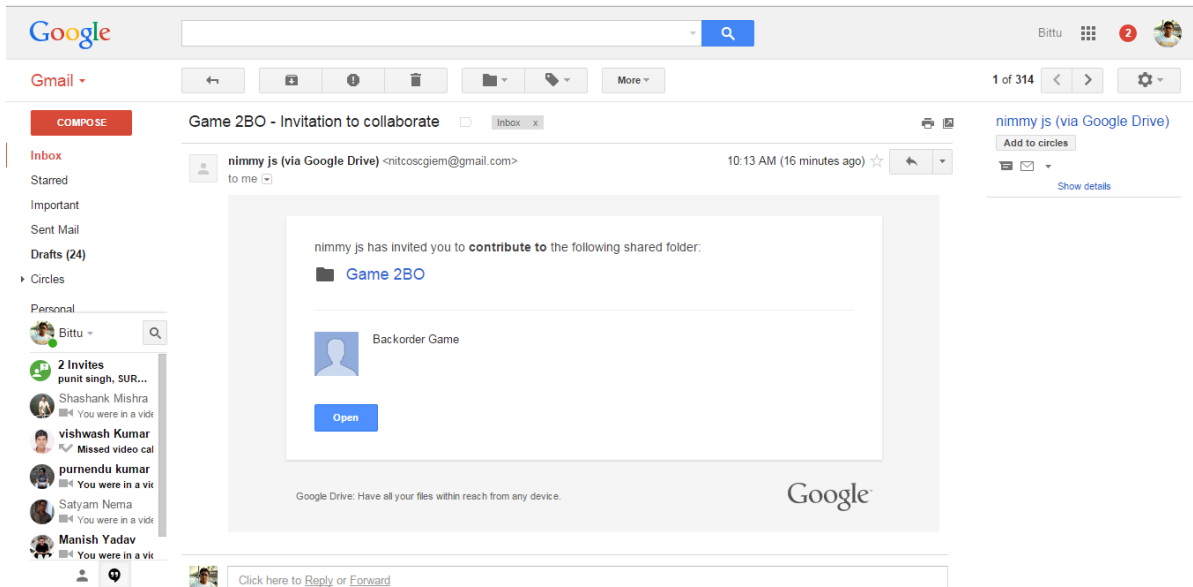
Fig.10. Screen shot of admin Gmail account with an invitation to collaborate from super admin

The email provides direct access to the Google Drive to the person with whom the folder has been shared. In order to save the folder in Google Drive they have to click on to the option available at the top right most corner "Open in Drive " and then proceed with the further steps.
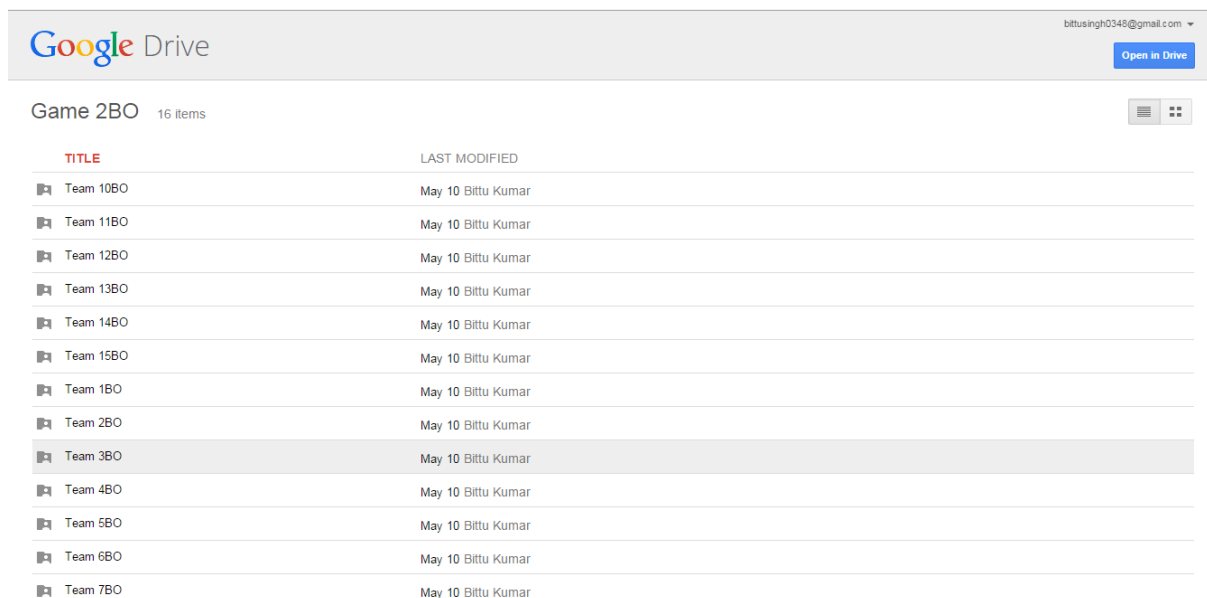

Fig.11. Screen shot of admin Google drive

Fig.12. Screen shot of admin Google drive

Figure 12 shows that the folder has been added on to the admin's Google Drive. There are 15 team folders and one Admin spreadsheet. Each team contains 4 players: Retailer, Wholesaler, Distributor and Factory. The admin gets to control the entire 15 teams. Since team independency is one of the features of Supply Chain Role Play Game Using Google Spreadsheet the admin can initiate game for one or more team at the same time.

Fig.13. Screen shot of player Google Spreadsheet list in admin's Google Drive

In Figure 13, there are four individual spreadsheets available for each player of selected team. For initiating the game the admin has to share the spreadsheets to the corresponding players one by one. Each player will receive an email from the admin.
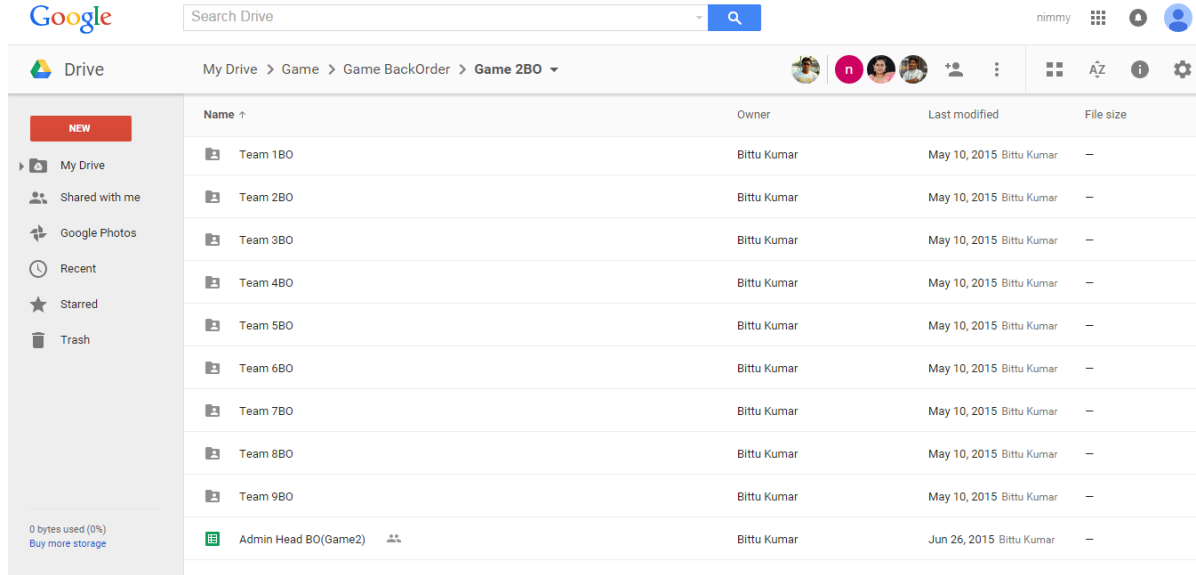

Fig.14. Screen shot of Game Backorder in admin Google drive

Figure 15 shows the Admin sheet for Game 2 Backorder. To get into this spreadsheet the admin has to click on the 'Admin Head BO (Game2) ' as shown in Figure 14.
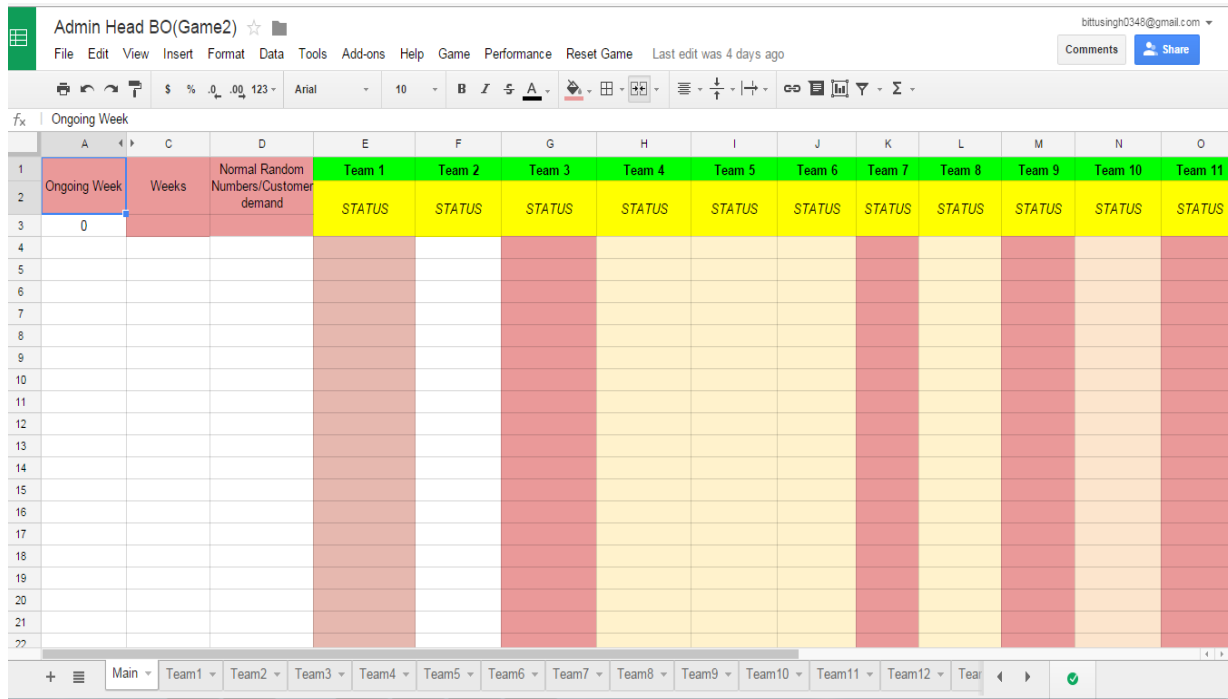

Fig.15. Screen shot of admin spreadsheet

. In this spreadsheet numerous tabs are available with different functionality. Here if we look upon to the details in the spreadsheet then the Column A indicates the ongoing week of the game. Column C stores total number of weeks for the game that is set by the admin. Column D stores customer demand that is generated by computer with reference to the parameters provided by the admin. And remaining column stores the game status of each team for the corresponding ongoing week.

Now the Admin will setup the Game Parameters and Start the game for each team.

Game Parameters Setup Procedure.

The admin has to setup the game by clicking on to the Game tab. Figure 16 shows the sub tabs available with the Game tab. Iorder to set the parameters the admin will click on "Game Setup" option in list box.
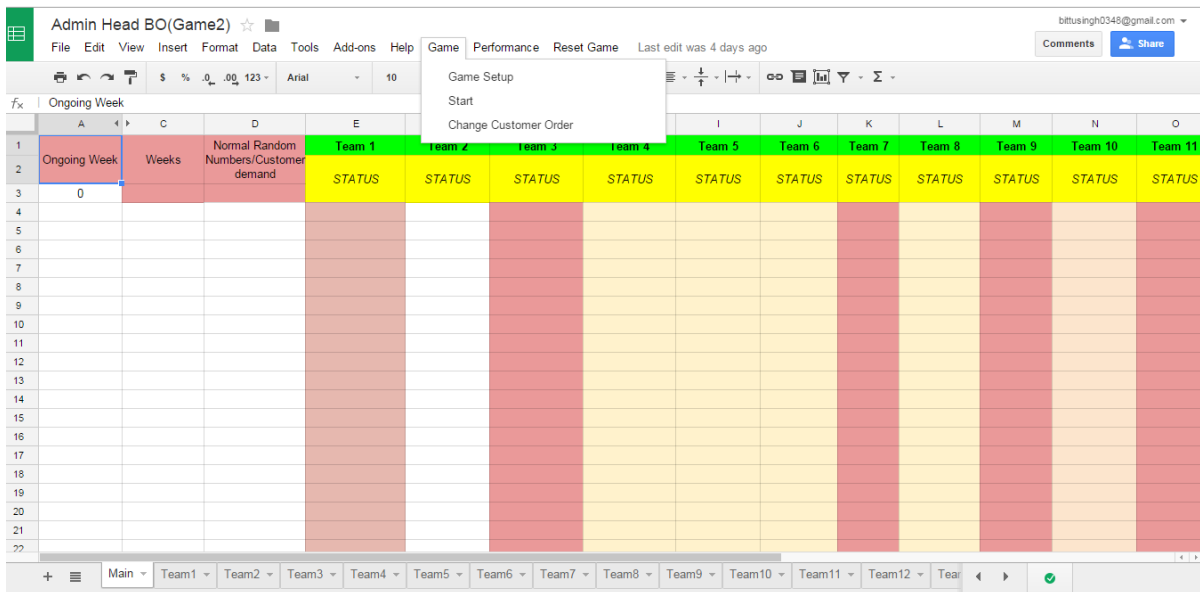

Fig.16. Screen shot of spreadsheet of Sub admin for game parameters setting

When the settings are being done for the first time an authorization window will appear in order to run the application. The figure shown below is the screenshot of the sub window that appears for the authorization permission.
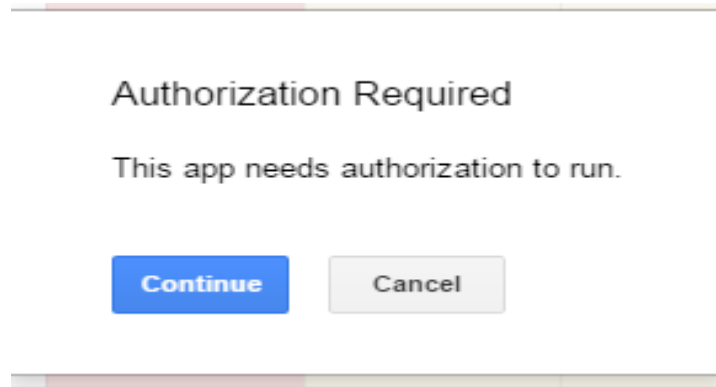
Fig.17. Screen shot of authorization sub window

The admin has to click on the 'Continue' button to get access to the applications provided by Google Spreadsheet. On clicking on to the Continue button one more window will be appear as shown in Figure 18.
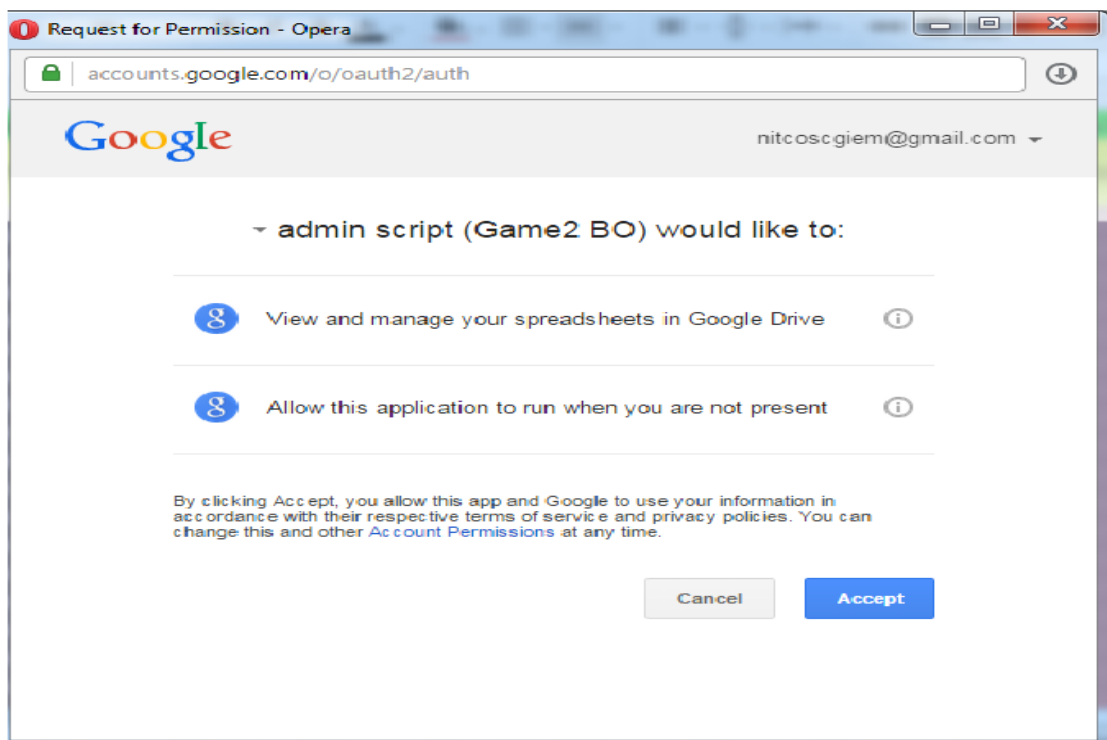

Fig.18. Screen shot of authorization window

When the Admin clicks on to the 'Accept' button the admin is accepting the terms and conditions to run the script as well as to run the application when the user is not present. As soon as the admin accepts the terms and conditions, there appears three GUIs one by one for setting parameters of the Game. The following parameters can be set under each setting options available by the admin. The screen shots are given below.
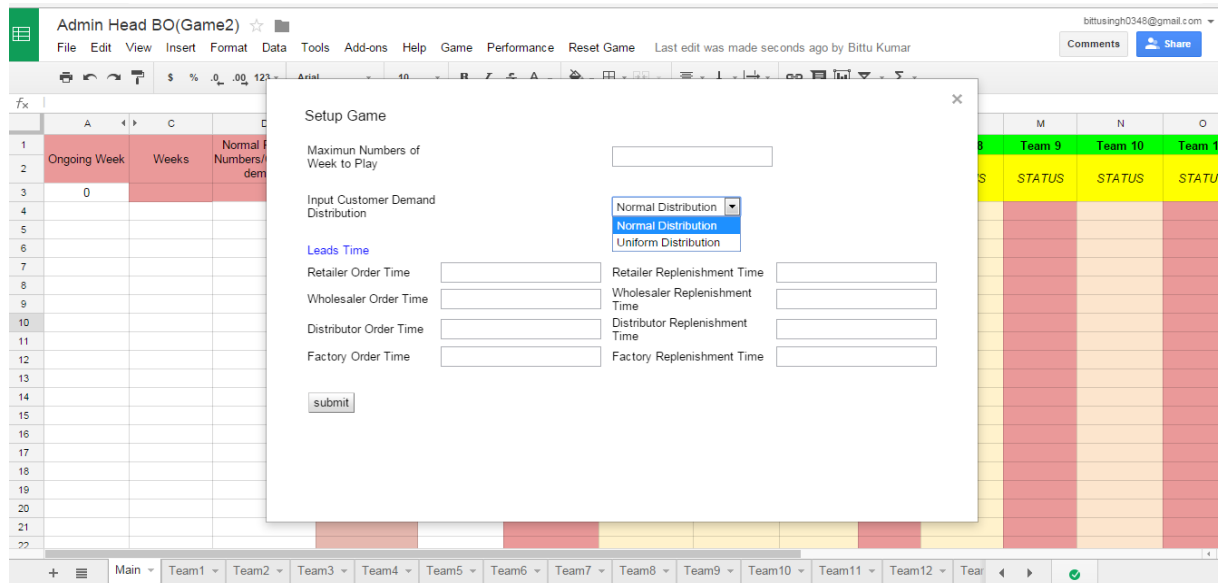

Fig.19. Screen shot of first GUI for setting parameters of the supply chain role play game using google spreadsheet
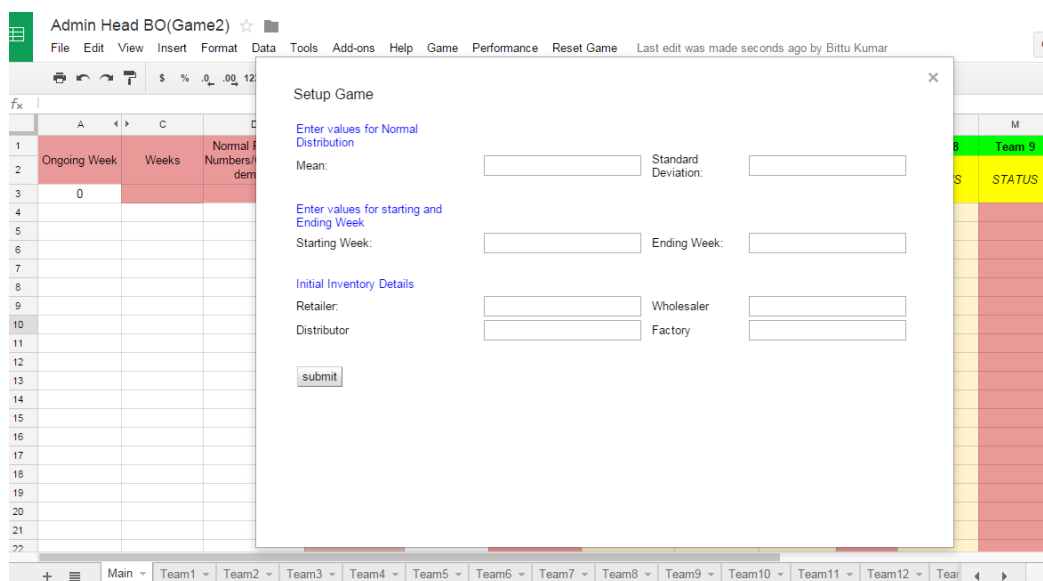

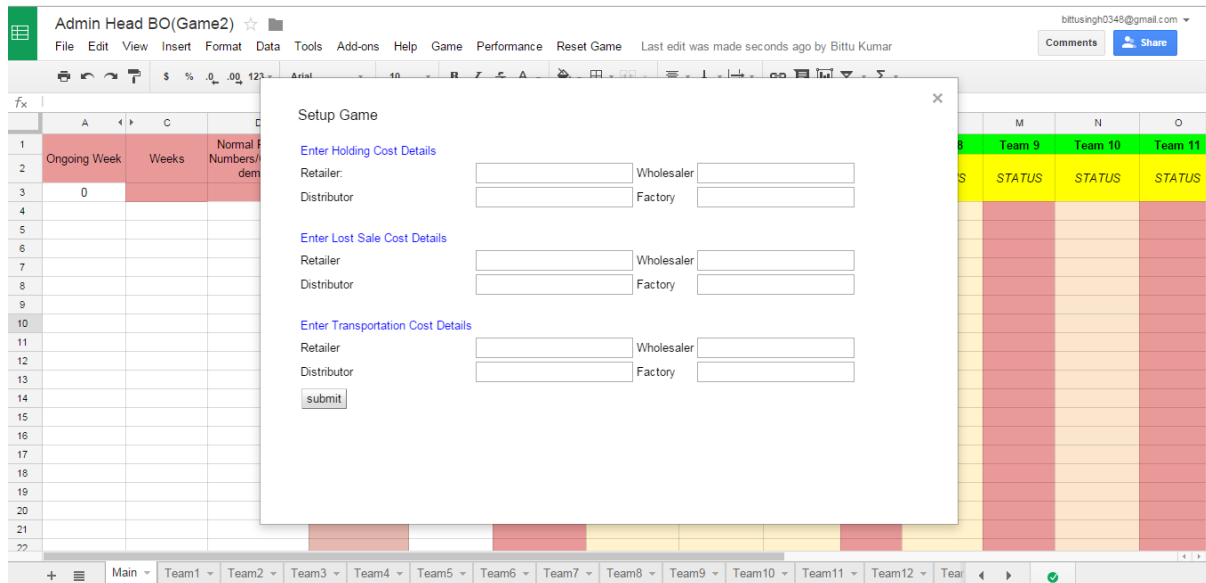Fig.20 Screen shot of setting the initial details for the game and demand

Fig.21. Screen shot of setting the Cost details

Some of the details given in Figure 19 are explained below.

➢ Maximum number of weeks of the play:

It is the duration of the play.

➢ Input Customer Demand Distribution

This software helps to generate the customer demand as a random variable which follows normal or uniform distribution.

➢ Lead time

Lead time of a stage is the sum of the order lead time and delivery lead time. These two can be set for each stage separately.

Order lead time: This is the time required by the order to reach next upstream stage from a downstream stage. For example, *retailer order lead time* is the time required by the retailer order to reach the next upstream stage, wholesaler.

Delivery lead time: This is the time required by the shipment quantity to reach downstream stage from its immediate upstream stage. For example, *retailer replenishment lead time* is the time required by the shipment quantity to reach the retailer from wholesaler.

Some of the details given in Figure 20 are explained below.

➢ Mean and standard deviation:

Required for setting up customer demand based on normal distribution.

➢ Performance analysis period:

It is the time duration under which the performance of the supply chain is evaluated. It is better to eliminate some initial periods to reduce the initial bias. Similarly it is better to remove some end periods to eliminate the end game effect.

➢ Initial inventory at each stage:

It is calculated based on the lead time and review period. For example if mean of customer demand is 20, order lead time is one, replenishment lead time is one and review period is one. The initial inventory is 60 (20*3), calculated as mean of customer demand multiplied by sum of lead time and review period.

Some of the details given in Figure 21 are explained below.

➢ Holding cost per unit per period at each stage
➢ Backorder or lost sales cost per unit per period at each stage
➢ Transportation cost per unit per period at each stage

Some more information about the Game

➢ Number of Teams: There are 15 teams for a game. Admin can initiate the game for one or more than one team at a time, i.e., team independency is a feature of this game. And each team (a serial supply chain) consists of 4 members.

➢ Business Environment: The environment considered are (i) Backorder and (ii) Lost sales

• Backorder:

✓ Demand (immediate or past due) against an item whose current stock level is insufficient to satisfy demand. Customer order that cannot be filled when presented, and for which the customer is prepared to wait for some time.

✓ For example, the customer demand is 100 units and the current inventory is 90 units, then the back order is 10 units which will be satisfied in the following weeks.

• Lost Sales:

✓ Demand occurs and the item is out of stock - the customer will not wait for the stock to be replenished, thereby the demand is a lost sale.

✓ For example, the customer demand is 100 units and the current inventory is 90 units, then the lost sales are 10 units because of out of stock.

Some information about the Performance

Performance Measures:

The performance of the supply chain under each setting can be evaluated for the performance evaluation period. Various performance measures possible at each stageof the supply chain are:

➢ Fill rate

➢ Variance of orders

➢ Total end period inventory

➢ Inventory variance

➢ Holding cost

➢ Total cost of the supply chain: This is the sum of the inventory cost and transportation cost of all stages in the supply chain

➢ Backorder or lost sales cost

➢ Total inventory cost: This is the sum of the holding andbackorder or lost sales cost of a stage

➢ Transportation Cost

After completion of game setup procedure, one message box will appear which indicates that the game setup has completed as shown below in Figure 22. Now Admin can start the game for team. Admin spreadsheet will be appearing as shown below in Figure 23.
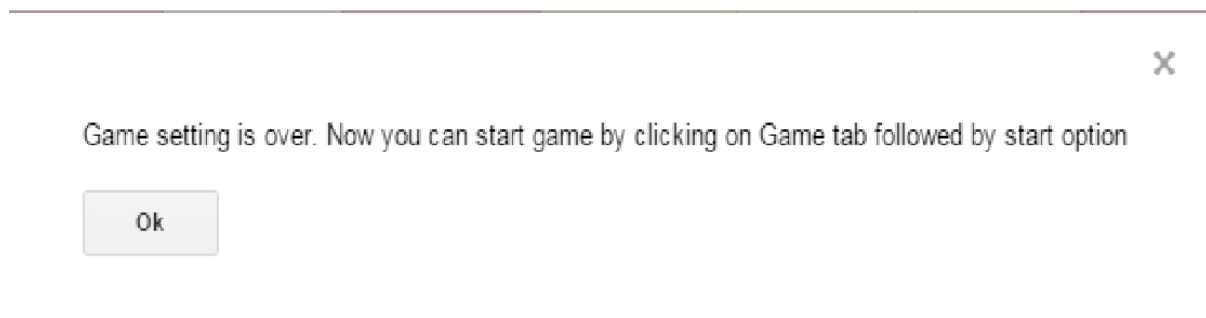

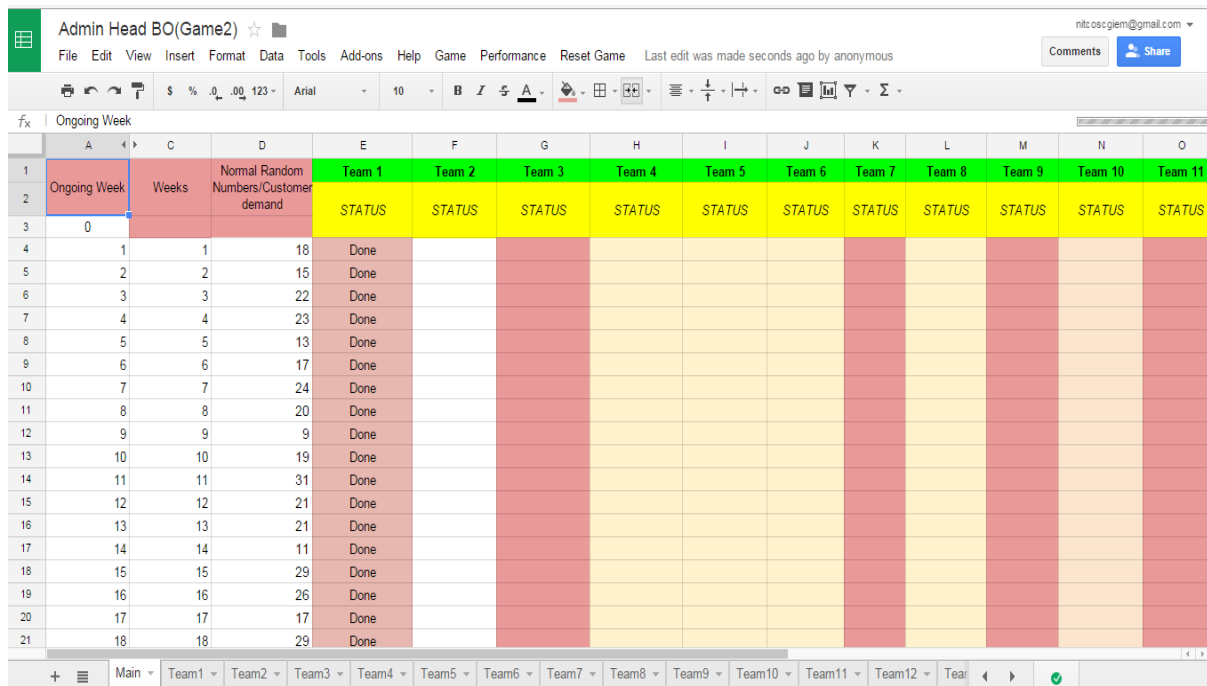Fig.22 Screen shot of message box generated indicating the completion of the game setup

Fig.23 Screen shot of admin spreadsheet with customer demand

Now Admin can initiate the game. For that he has to click on the Game tab, under Game tab click on the 'start' option, one GUI will be appear as shown in Figure 23.
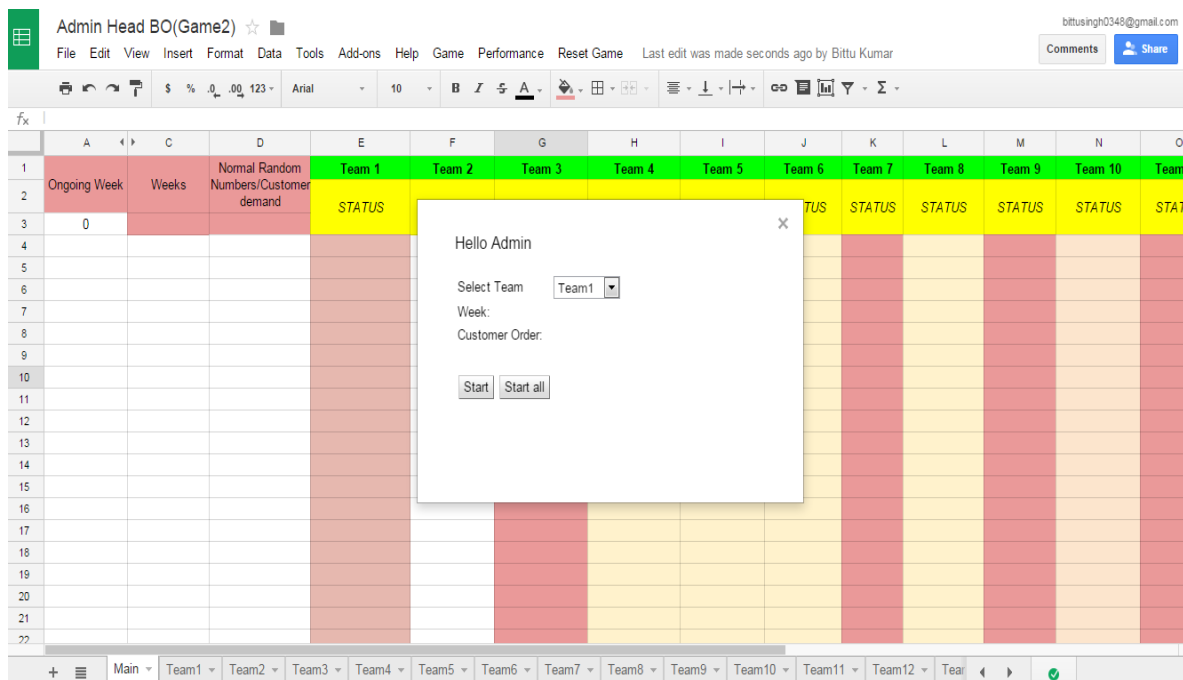

Fig.24 Screen shot of admin spreadsheet for start the game

Figure 24 shows 1. GUI that contains a list box for team selection, 2. Label that show week and customer demand. If admin wants to start game for one team then he/she will select the

corresponding team from the list box and click on the 'Start' button. After clicking on start button game will be initiated for that particular team. If he/she wants to start game for all 15 teams then click on 'Start all' button without selecting any team from list box. Then the game will be initiated for all teams.