

VMI-BASED SUPPLY CHAIN SETUP PROCEDURE

This software helps the instructor or administrator to set a four stage serial supply chain under different settings or parameters and evaluates the same by using various performance measures. The screenshot of VMI-Based Supply Chain Role Play Game is given in Fig.2.

	OR MANAGED INVENTORY ED SUPPLY CHAIN ROLE PLAY GAME
Home Login Help About VMISCRPG MI-Based Supply Chain Role Play Game is a simulation game for an play the game.	a serial-supply chain. At a time, many teams(comprising four players each
We recommend you to use Mozilia Firefox 4.0(or above) OR Google Chrome 9(or above) OR Opera to successfully make use of this applcation; with Javascript and Cookies Enabled.	We request you to, first install any of these browsers, if you are not having any of them. (Installer for Firefox-9.0 is provided with this application <u>Get it</u> <u>here</u>)
See below for current status of your browser : You're using Chrome 26 on Windows, with Cookles	& Javascript Enabled: true !

Fig.2. Screenshot of VMI-Based Supply Chain Role Play Game

Click on admin login the following window will appear as a result.

National Institute of Technology Calicut



	VENDOR MANAGED INVENTOR BASED SUPPLY CHAIN ROLE PLAY GAME	RΥ
Home	Login Help	
Log	gin to get access	
Username :	Enter your unique username here	
Password :	Enter your password here	
	Login	

Fig.3. Screen shot of administrator Login page

Enter the user name, password and click on login button. It will open the instructor page as shown below.

Welcome Instructor : Lavanya	ADMIN FUNCTIONS
	Setup a New Game
Please navigate among the various actions provided in the right pane.	Current Game Details
	Save the Current Game
	Modify Max Number of Weeks
	Update Current Game
	Players of Current Game
	Save Customer Demand Data
	Saved Demand Data Files
	List of Saved-Games Details
	Grey Relation Analysis Between Saved games

Fig.4. Screen shot of Admin Functions

Click on the setup a new game and follow the steps to set the game. The screen shot is shown in Fig.5.



Game Setup	
Set a new Game in 6 easy steps!	-
You will be forwarded to the next step automatically, once you complete its previous step. Steps 3,4 and 5 has to be done strictly one after the other in one go. All other steps are independent.	
Click the image below to begin the procedure :	
It will automatically let you jump to that Step where you left it last time.	
Enable Player Disable Player Review Player-	
Registration Registration Requests Assign Role Set Game Begin Game	

Fig.5. Screen shot of Game Setup

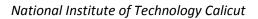
Supply Chain Settings:

The following parameters can be set at in each setting by the administrator. The screen shots are shown below.



Game Sett	ngs	
	Number of Teams :	'1'
	Business Environment :	Lost Sales O Backorder O
	Type of Information Sharing :	VMI 💌
	Input Customer Demand Distribu	tion : Normal distribution
	Maximum Number of Weeks to Pl	ay : Enter count of weeks
Lead Times		
Retailer Order	Time must be 0	Retailer Receiving Time In fulfilling order
Wholesaler Or Time	der In placing order	Wholesaler Replenishment In fulfilling order
Distributor Or Time	In placing order	Distributor Replenishment In fulfilling order
Factory Order	Time In placing order	Factory Production Time In fulfilling order
Initial Invento	y Details Retailer retailer Distributor distributor	Wholesaler Molesaler Factory factory
Initial Shelf S	pace Allowed	
		ESET NEXT
	May 03, 2013 © Copyright 2012 Supply (Chain Role Play Game Developed at <u>NIT Calicut, India</u>

Fig.6. Screen shot of setting the initial details for the game and some parameters of supply chain





VMI-based Supply chain role play game

	the Mean here	tandard Deviation	Enter the SD here
ance Evaluation :	Enter values for starting	and ending week	
Starting Week	Enter starting-week here	Ending Wee	k Enter ending-week here
olding Cost Detai	ls		
Retailer	Holding cost for retailer	Wholesaler	Holding cost for wholesaler
Distributer	Holding cost for distributor	Factory	Holding cost for factory
		Factory	Holding cost for factory
Distributer		Factory	Holding cost for factory
		Factory	Holding cost for factory Backorder cost for wholesaler

Fig .7. Screen shot of demand and cost settings window

Business Environment:

In which settings the game is played

- 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.

> Type of Information Sharing:



The following are the possible categories of Information sharing and this can be set under *backorder* or *lost sales* cases.

VMI with four players:

In this the four players acts in a supply chain, and each week the retailer allows the shelf space to wholesaler to get the quantity from the wholesaler.

VMI with three players:

In this the three players acts in a supply chain, and shelf space is fixed by the administrator to get the quantity from the wholesaler to retailer. In this retailer role is absent, but his function will visible to the wholesaler.

> Input Customer Demand Distribution

- ✓ This software helps to generate the customer demand as a random variable which follows normal or uniform distribution.
- ✓ It also provides the facility to enter the demand data manually which follows any distribution. which helps to compare the performance at same customer demand

> Maximum number of weeks of the play:

It is the duration of the play.

➢ Lead time

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

Replenishment or 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.

> 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.



- > Initial shelf space allowed:
 - \checkmark In case of four players initial shelf is allocated to wholesaler for the week 1
 - ✓ In case of three players the shelf space is fixed and it is for entire duration of game play.
- 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.

- > Holding cost per unit per period at each stage
- > Backorder or lost sales cost per unit per period at each stage

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 stage of the supply chain are:

- ➢ Fill rate
- Variance of orders
- ➢ Total end period inventory
- ➢ Inventory variance
- Variance of allocated space
- Variance of allocated quantity
- Holding cost
- Total cost of the supply chain: This is the sum of the inventory cost of all stages in the supply chain
- Backorder or lost sales cost
- Total inventory cost: This is the sum of the holding and backorder or lost sales cost of a stage

The screen shot of performance measures provided by software are given below.



VMI-based Supply chain role play game

S.No.	Performace Measure	Checkbox
1.	Fill rate	
2.	Variance of Orders	
з.	Total End Period Inventory	
4.	Inventory Variance	
5.	Variance of Allocated Space	
6.	Variance of Allocated Quantity	
7.	Total Cost of Supply Chain	
	Some other Useful Data	
1.	Demand Arose	
2.	Demand Met	
з.	Total Inventory Cost	
4.	Lost/Backorder Sales Quantity	
5.	Lost/Backorder sales Quantity Cost	
6.	Total End Period Inventory Cost	

Fig.8.Screen shot of performance measures

Timer Settings:

This setting includes notification time and blocking time. By setting this it shows the timer in each window of the supply chain. If the players do not take the decision within the specified time it will block the team. The screenshot of timer settings window is shown below. After setting the time click on start game, the game will start to play.

t Performace Measure Display Setting , Timer Settings & Begin Game		
Want to include timer settings in Game	V	
	Start Game	
Set the time when first Notification will come		
Day		0 💌
Hours		0 💌
Minutes		0 💌
Set the time when team will block		
Day		0 💌
Hours		0 💌
Minutes		0 💌

Fig.9.Screenshot of timer settings window

The minimum value of notification time is 3 minutes and blocking time is 2 minutes.