The utilization of Vendor-Managed Inventory (VMI) systems in a Thai mass retail business

by

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and

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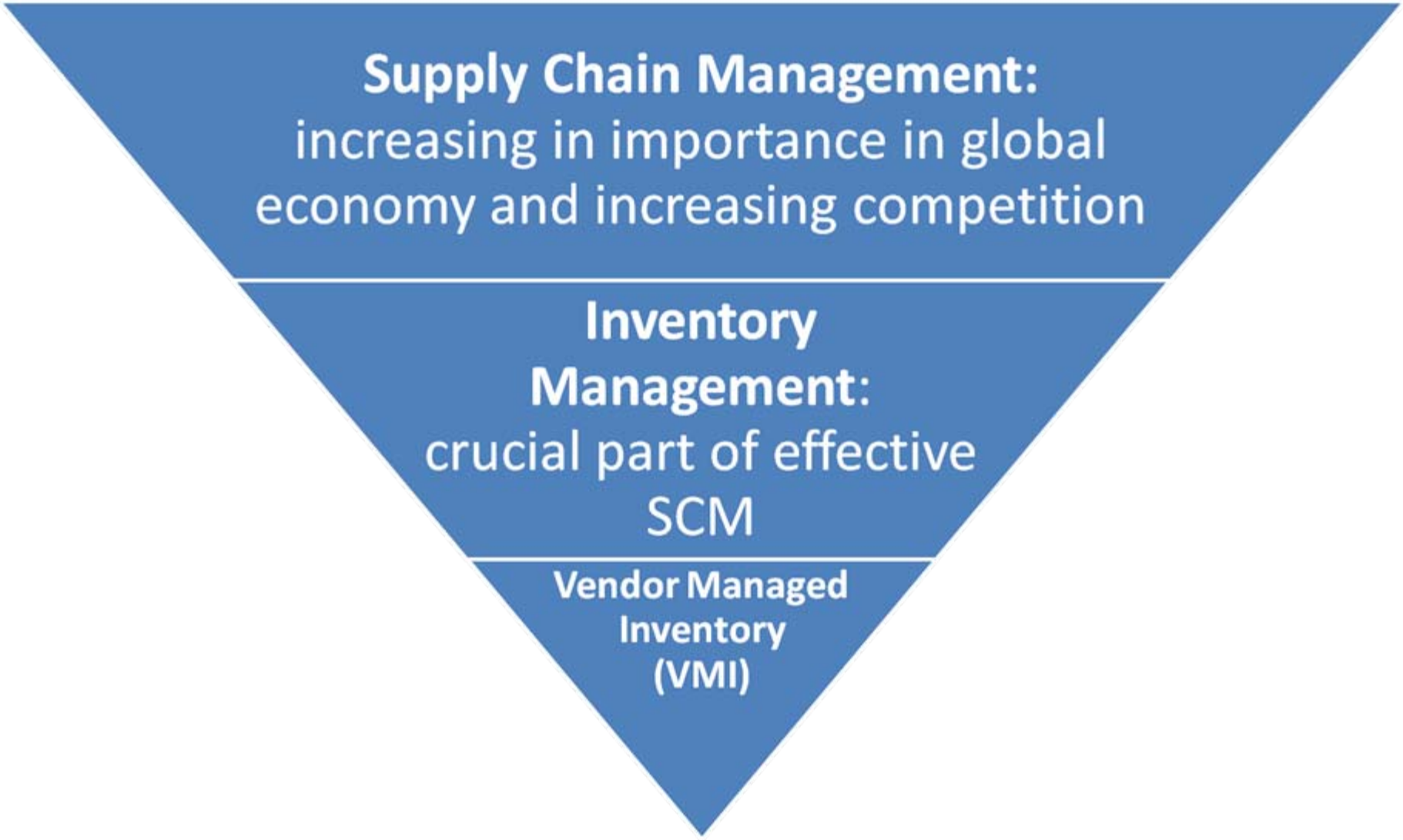
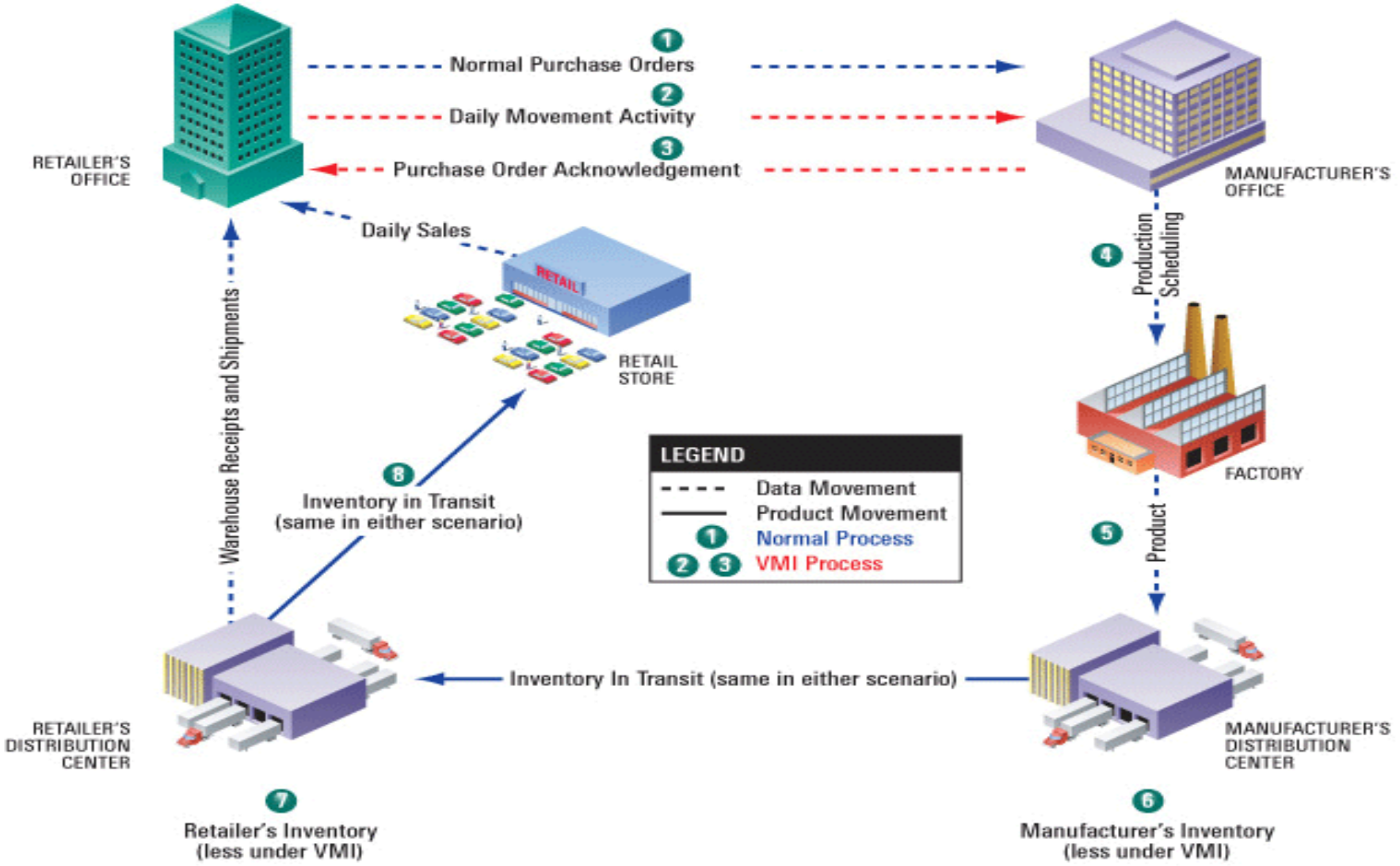
INTRODUCTION



BRIEF BACKGROUND OF VMI

TRADITIONAL INVENTORY MGT.	VENDOR MANAGED INVENTORY
• supplier/vendor and customer/retailer independently manage their own inventories at their own distribution centres (DCs)	• supplier/vendor takes full responsibility for managing the inventory of its products at the retailer's DC
• To replenish goods, the retailer issues purchase orders (PO) stating desired quantity and time of delivery to the vendor	• retailer does not issue purchase order (PO) but regularly provides Point-of-sales (PoS) data and information about movement of goods to the vendor • vendor determines time and quantity of replenishment based on the above information and issues purchase order (PO) for the retailer

CONCEPT & PROCESSES OF VMI



Source: adapted from I2: The Supply Company website (2009)

Main benefits of VMI for both parties

- Information sharing enables better replenishment decision and reduces need for forecasting
- closer vendor-retailer relationships resulting in improvement of service levels
- reduction of buffer stock, holding costs, stock-outs and obsolete inventory

Solving problems in VMI systems

- VMI systems can fail. Successful system depends a lot on good design from the beginning.
- There are wide variety of VMI systems implemented in various industries among different companies.
- The literature describes these systems and problems with VMI but there was no systematic approach for analyzing different types of VMI systems until 2007.

VMI Metrics system

- ***VMI Metrics*** was developed in Sweden by Mikael Ståhl Elvander, Dr. Sami Sarpola, and Prof. Stig-Arne Mattsson in 2007.
- It is a systematic framework that could be used as a tool to help analyze the design dimensions of VMI systems and to see interrelationships between different dimensions.
- This will help to make better decisions what is needed and what is possible for setting up, changing and improving design of VMI systems.

Use of VMI metrics

- Elvander et al developed their framework by studying, describing and classifying VMI arrangements between several manufacturing companies in Sweden
- But so far, there is no methodology of applying the framework to a VMI system to validate the usefulness of this framework in analyzing and evaluating VMI systems.
- So this is done here by studying VMI in Thailand with a mass retail company using VMI with 10 vendors to see if this framework is useful enough to begin to develop a methodology and also discover what kind of VMI systems being used here.

Main dimensions of VMI systems

Inventory control

- inventory location
- sourcing policy
- inventory ownership

Decision-making

- replenishment monitoring and ordering
- control limits
- replenishment decision
- shipment decisions

Information

- demand visibility
- access to information
- IT configuration

Systems Integration level

- level of horizontal integration (retailers)
- level of horizontal integration (items)
- level of vertical integration

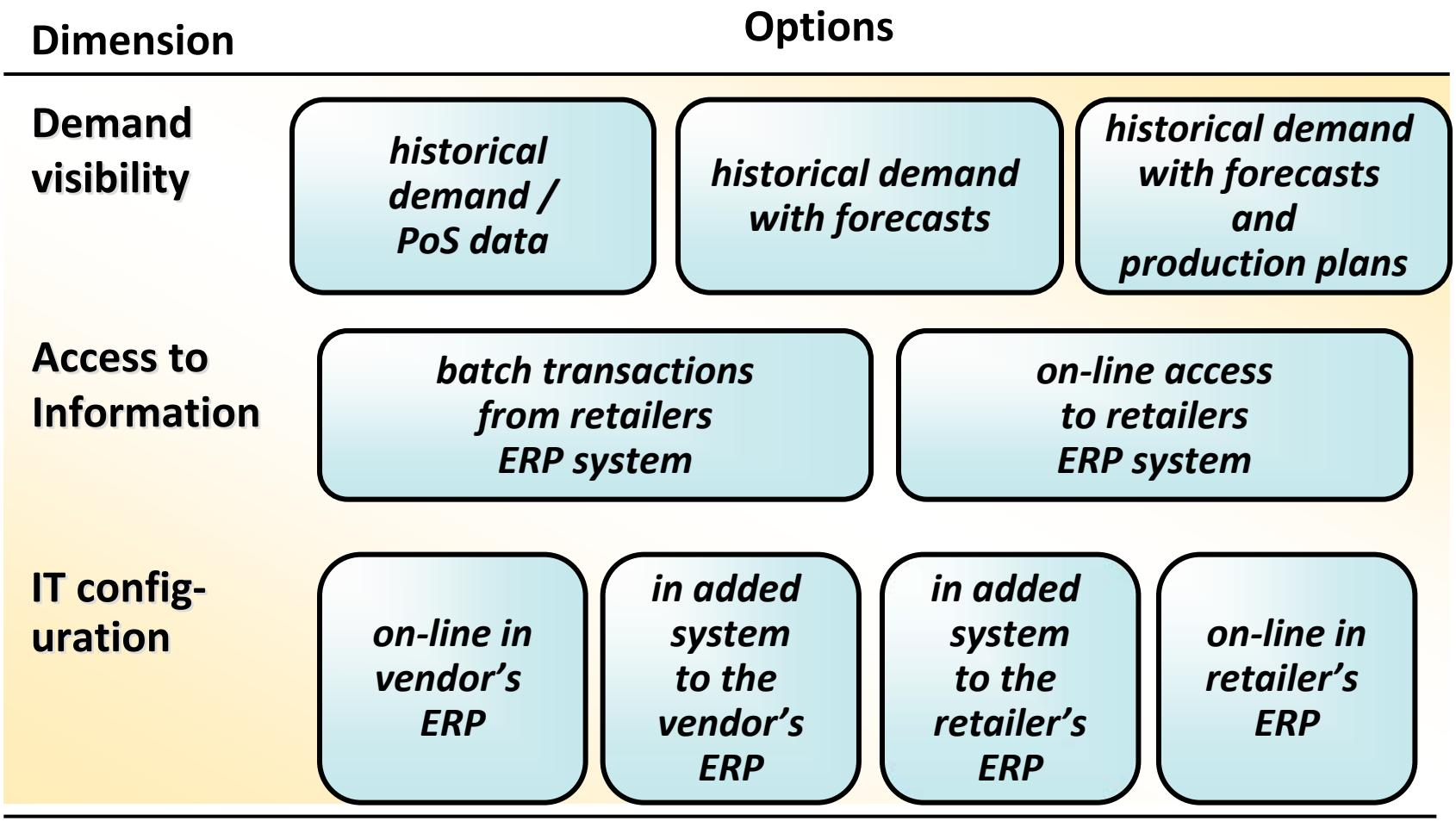
Source: Elvander, Sarpola and Mattson (2007)

Inventory control dimensions

Dimension	Options		
Inventory location	*vendor's distribution centre*	*retailer's distribution centre*	*retailer's regional centres or retail outlets*
Sourcing policy	*deliveries from vendors stock (DFSS)*	*deliveries from vendors production (DFSP)*	
Inventory ownership	*vendor: vendor invoices when items are issued*	*retailer: vendor invoices when items are issued*	*retailer: vendor invoices when items are delivered*

Source: Elvander, Sarpola and Mattson (2007)

Information dimensions



Source: Elvander, Sarpola and Mattson (2007)

Decision-making dimensions- 1

Dimension	Options			
Replenish-ment monitoring & ordering	*continuous review and ordering*	*periodic review and ordering*		
Control limits	*no minimum and maximum limits*	*only minimum limit*	*only maximum limit*	*maximum and minimum limits*
Replenishment decision	*vendor makes replenishment order decisions*	*vendor decides only quantity or time, not both*	*retailer confirms replenishment orders made by vendors*	*retailer gives 'order proposals'*

Source: Elvander, Sarpola and Mattson (2007)

Decision-making dimensions- 2

Dimension	Options	
Shipment decision	***vendor: vendor makes shipment decisions***	***retailer: retailer makes shipment decisions***
Shipping policy	***time-based shipping***	***quantity-based shipping***

The last dimension was added to the VMI Metrics framework

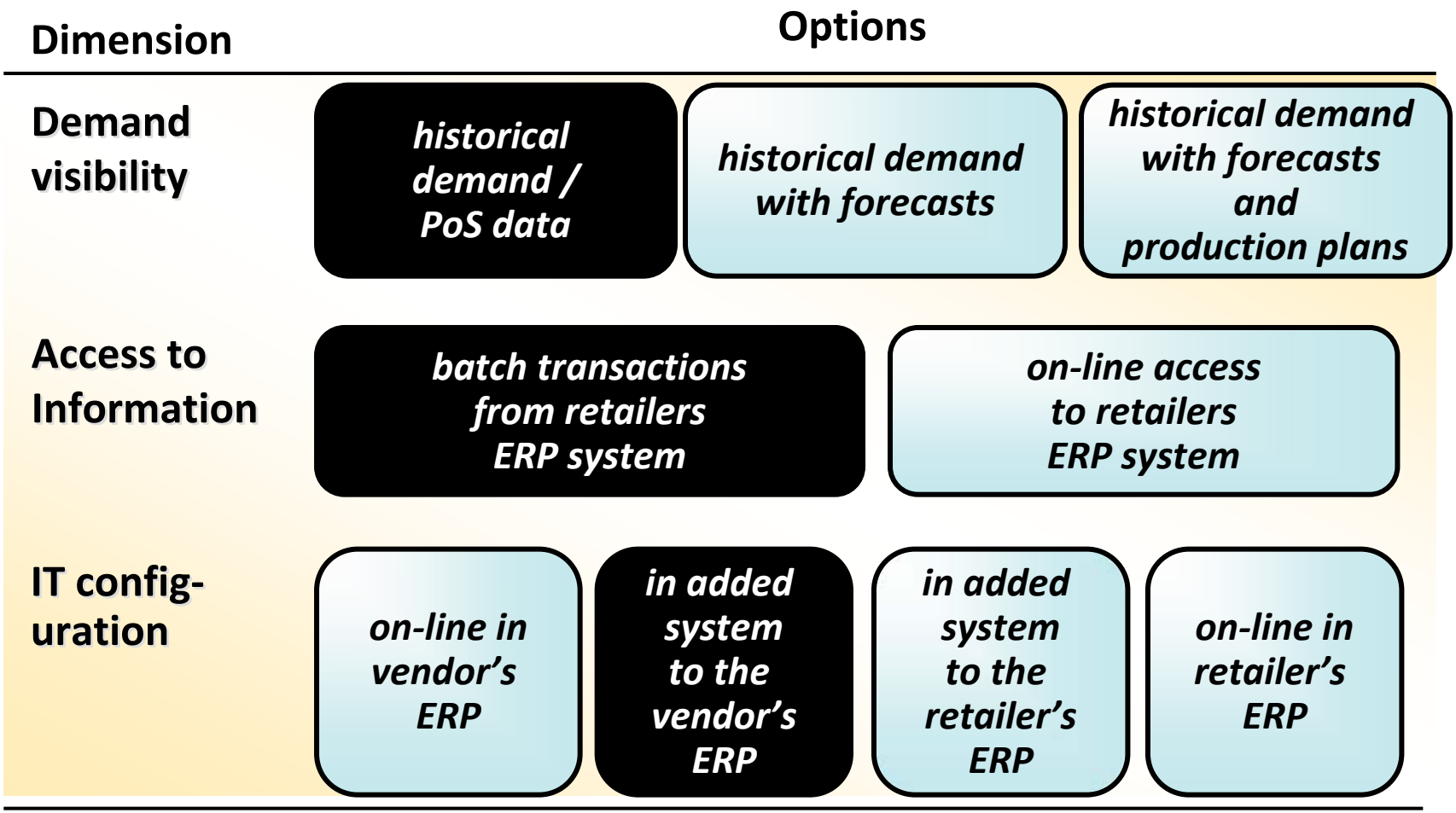
Source: Elvander, Sarpola and Mattson (2007)

Results for Inventory control

Dimension	Options		
Inventory location	*vendor's distribution centre*	*retailer's distribution centre*	*retailer's regional centres or retail outlets*
Sourcing policy	*deliveries from vendors stock (DFSS)*	*deliveries from vendors production (DFSP)*	
Inventory ownership	*vendor: vendor invoices when items are issued*	*retailer: vendor invoices when items are issued*	*retailer: vendor invoices when goods are delivered*

Source: Elvander, Sarpola and Mattson (2007)

Information dimensions



Source: Elvander, Sarpola and Mattson (2007)

Decision-making dimensions- 1

Dimension	Options			
Replenish-ment monitoring & ordering	*continuous review and ordering*	*periodic review and ordering*		
Control limits	*no minimum /maximum limits*	*only minimum limit*	*only maximum limit*	*maximum and minimum limits*
Replenishment decision	*vendor makes replenishment order decisions*	*vendor decides only quantity or time, not both*	*retailer confirms replenishment orders made by vendors*	*retailer gives 'order proposals'*

Source: Elvander, Sarpola and Mattson (2007)

Decision-making dimensions- 2

Dimension	Options	
Shipment decision	*vendor: vendor makes shipment decisions*	*retailer: retailer makes shipment decisions*
Shipping policy	*time-based shipping*	*quantity-based shipping*

The last dimension was added to the VMI Metrics framework.

The vendors that used time-based shipping policy also used both minimum and maximum control limits.

Those that used quantity-based shipping used only maximum control limits.

Source: Elvander, Sarpola and Mattson (2007)

Conclusions

- VMI Metrics framework can be applied to VMI systems in Thai mass retail industry because all dimensions found fall inside the framework.
- Shipping policy was found to be important dimension needed to be included in the framework because it is linked to Control Limits.
- VMI systems used in this case were not really ‘full’ VMI because mass retailer still wants to confirm POs before allowing delivery to be made.

Future research

- First step of establishing VMI Metrics as viable tool, especially in mass retail industry, has been done.
- Next step to developing more comprehensive methodology is to study other mass retailers using VMI with multiple vendors and vendor companies supply to multiple retailers. This will include System Integration dimensions.
- This is to help make evaluations and comparisons between performances of different VMI system designs

Thank you