The impact of vendor-managed inventory on retail logistics

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Retail supply chains

Process:

Vendor → Distribution center → Store

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The replenishment process
For which vendor context can VMI improve supply chain performance?
Mixed results in practice

Successes
Walmart
Procter and Gamble
Electrolux
+ multiple unspecified cases studied

Failures
Sparta stores
K-mart (partial)

Impact of context factors

Stable demand
Clarke and Hammond, 1997
Niranjan et al., 2012
Yang et al., 2003

Unstable demand
Disney and Towill, 2003
Smáros et al., 2003
Research outline

Methodology

- Literature study
- Case study

Results

- 3 components of VMI
- Empirical verification and specification

Framework

- Process opportunities condition
- Organizational opportunities condition
The components of VMI
The 3 components of VMI

- Information sharing
- Decision transfer
- Inventory relocation
Information sharing improves Supply Chain performance through uncertainty reduction only if the vendor:

- Has better access to information
- Can store and combine more information
- Can improve forecasting quality and fit
Transferring all replenishment decisions to the vendor improves SC performance **only if the vendor:**

- Can remove constraints
- Increase the updating frequency
- Improve the quality of inventory rules
Enabling the vendor to move inventory to the retailer’s facility improves operational performance, **only if the vendor:**

- Is able to move inventory down the supply chain
- Prevents errors down the supply chain
- Can operate remote inventory
VMI framework
VMI framework

- Information sharing
- Decision transfer
- Stock relocation

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VMI GAINS

Risk of performance decrease

Organizational mismatch (unseized potential)

Positive

Process mismatch (disappointment)

None

Organizational opportunities

Can the vendor organization realize opportunities that the buyer could not?

Process opportunities

Do the advantages of VMI apply on the replenishment process?
Process and demand uncertainty

Uncertainty reduced / Constraints removed

Process and demand uncertainty

Process Opportunities

Trivial situations / Dedicated chains

Complexity too high to operate

Uncertainty reduced / Constraints removed

Process and demand uncertainty

Complexity too high to operate

Process and demand uncertainty

Trivial situations / Dedicated chains

Complexity too high to operate

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Complexity too high to operate

Process and demand uncertainty

Uncertainty reduced / Constraints removed
Vendor organization size and relation importance

- Vendor lacks expertise/
  Retailer more suited

- Vendor can improve
  monitoring and methods

- Already optimized
Applying the framework

- Information sharing
- Decision transfer
- Stock relocation

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Applying the framework

Information sharing
- Process opportunity
- Organization opportunity

Decision transfer
+ + +
+ + +
- - -

Stock relocation
+ + +
+ + +
+ - -
VMI GAINS

Risk of performance decrease
Organizational mismatch (unseized potential)
Process mismatch (disappointment)
Positive
None
Large

Do the advantages of VMI apply on the replenishment process?

Organizational opportunities
Can the vendor organization realize opportunities that the buyer could not?

Applying the framework
Conclusion

We can only understand impact of VMI if we examine the separate components.

(Trust in) stable flows in the supply chain are crucial for VMI success.
Thank you for your attention

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