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# Supply Chain Design and Planning

KPI Relative to Inventory Management

## INTRODUCTION

- Managing inventory holding is demanding, especially for larger companies, comprising **large amount of information and data**.
- Supply chain management (SCM) has become a key management focus and the source of **competitive advantage** for many companies. Companies are implementing SCM in order to react to the increasing **uncertainty and complexity** of the business environment, to advance their competitive position in the entire value chain.
- *“If you cannot measure it, you cannot improve it“*
- In the globalization era, companies realized that supply chain excellence is the ultimate competitive advantage source and that today the competition is not among the products but supply chains.
- However, it is a significant challenge to measure supply chain performance at these dynamic interactions.



## OVERVIEW

The objective and an overview of the lesson.

- Introduction to Key Performance Indicators (KPIs)
- Inventory related KPIs
- Selection of inventory metrics (KPIs)
- Non-financial KPIs

# KEY PERFORMANCE INDICATORS (KPIs)

- KPIs are used by companies to manage internal or external processes and activities.
- KPI can be defined as a **practical and objective measurement** of progress:
  - Towards a predetermined goal
  - Against a required performance standard
- KPIs are quantifiable (metric) aspects that reflect key factors that organizations monitor and manage to achieve success.
- Using KPIs for performance measurement ensures that business performance or activity is always **evaluated against a targeted** benchmark. Thus, any fluctuation is immediately perceived, and if performance is going into unwanted direction, actions can quickly be taken to address and improve the situation.

# KEY PERFORMANCE INDICATORS (KPIs)

- Author - Van der Vorst, made a distinction in logistics between performance indicators on three main levels:
  - 1) **the supply chain level** (e.g. product availability, quality, responsiveness, delivery reliability and total supply chain);
  - 2) **the organization level** (e.g. inventory level, throughput time, responsiveness, delivery reliability and total organizational costs);  
and
  - 3) **the process level** (e.g. responsiveness, throughput time, process yield and process costs).

However, any logistical system should try to optimize and steer its decisions to the metrics it later shall be evaluated upon. A clear insight into the factors that drive logistical operations provides us with adequate planning objectives.

## INVENTORY

Inventory categorization by:

- location
- raw materials
- work in progress
- suppliers in operations
- finished goods



# INVENTORY

Inventory can be further classified also by its type:

- **Cycle inventory** – the inventory amount required to meet demand for a certain part or product between two purchasing events
- **Safety or uncoupling inventory** – the buffer, stock inventory to compensate demand and supply uncertainties
- **Seasonal inventory** – the inventory that company builds upon on predictable changes in demand that occurs during a certain period
- **Transit inventory** – refers to inventory “en route”, from one location to another.

Inventory exists within a company or supply chain for numerous reasons, e.g. a safety precaution against fluctuations in demand, unstable supply, or quantity produced. However, it is important to get accurate inventory data as it affects production planning and purchasing.

# INVENTORY AND SELECTION OF KPIs

- KPIs selection represents the most critical phase, since indicators representing an added value. Thus, companies should start assessment with smaller inventory KPIs number.
- There is no „*one size fits all*“, but KPIs should be customized for every company's needs.
- Authors Gunasekaran and Kobu (2007) argued six purposes regarding measuring performance:
  - Helps identifying success
  - Shows if customer needs are met
  - Helps understanding organizational processes
  - Helps recognizing “hot spots” and potential improvements
  - Assures that decisions are based on facts, not intuition
  - Shows if planned improvements is happening.



# INVENTORY AND SELECTION OF KPIs

- Common KPIs characteristics:
  - Quantity and quality (measured by numbers vs. measured by examining)
  - Most KPIs are financially oriented (revenue, net margin, ...)
  - Non-financial measures (not examined in a financial way)
  - Measuring happens frequently (hourly, daily, monthly)
  - Tied with the strategy
  - KPIs understood and used at all organizational levels
  - KPIs are build based on company's individual needs.

# NON-FINANCIAL KPIs

Karl et al (2018) carried out a systematic literature review in order to explore the influence of non-financial KPIs in the supply chain resilience. Resilience in supply chains and companies recognise the ability to absorb shocks in the form of extreme events and the adaptive capability to adjust to new circumstances. Most important non-financial KPIs:

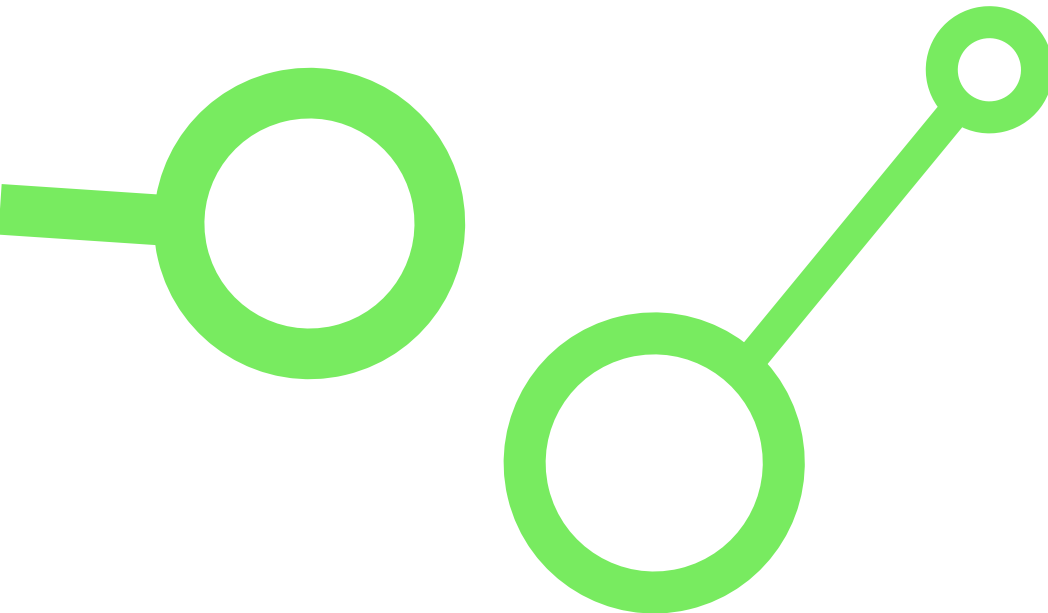
- Knowledge management
- Security
- Information sharing
- Etc.

Karl et al (2018) claim that there exists a lack of KPIs to supply chain with unexpected events.

## SUMMARY

Summary of the lesson.

- KPIs are important as well as their suitable selection
- There is no „one size fits all“.
- Importance of non-financial KPIs.



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THANK YOU!

