The Supply Chain Triangle concept

The essentials

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no man is an island

This whitepaper is the first in a series explaining the Supply Chain Triangle concept. Each part can be read separately. However, it is best to read ‘The essentials’ first. As the title suggests, this whitepaper is a concise – but very useful – representation of the concept. For the full story, including a host of practical examples, we recommend reading Bram Desmet’s book Supply Chain Strategy and Financial Metrics. The Supply Chain Triangle of Service, Cost and Cash.’

MORE INFO

executive summary

Without a doubt, we are living in interesting times. Our world is digitizing and globalizing at a fast pace. Customer expectations have changed and customers now want to buy products or services in a different and faster way. Besides, as a long-lasting consequence of 2008's economic crisis, sustainable business growth, liquidity and profitability are on top of the business agenda.

We are also evolving into an **ecosystem-driven economy**, where companies are not only competing against other companies, but whereby success will depend on the ability to create a strong and sustainable ecosystem.

To be able to cope with the flow of goods, as well as the information and cash returning within the ecosystem, in a fast and flexible way, **strategic supply chain management** will be crucial.

Supply chain management was for many years the 'black sheep of the family'. It has not been understood enough, and even today, supply chain managers still battle to earn their seat at the C-suite table.

A fundamental shift in mindset is required to stay on board in the changing world. We must finally break through the functional silos. The Supply Chain Triangle of service, cost and cash is a perfect framework for this.

Is strategic supply chain management part of your business, or is strategic supply chain management your business? We have been waiting to answer this question for a very long time.

Frank Vorrath, Vice President Global Supply Chain, Johnson Controls.

service

- Target service level
  - Fill rate
  - Lead time
- Product portfolio
- Order flexibility

cash

eg inventory
in general ‘working capital’

cost

- Logistics
- Warehousing
- Manufacturing
- Purchasing

the concept explained

The Supply Chain Triangle concept captures the idea that as organizations, we deliver different types of **service** to our customers, which comes at a certain **cost** and requires a certain amount of inventory, or more generically, **cash**.

The triangle is a practical framework on which to balance service, cost and cash within your organization and your entire ecosystem.

The balancing of these three might be the essence of supply chain management. That’s why we have called the corresponding triangle the Supply Chain Triangle.

At long last, the Supply Chain Triangle is about **maximizing shareholder value via sustainable growth**. This means that Supply Chain and Finance, indeed the whole organization, have the same goal, and share a common interest in aligning the three corners of the Supply Chain Triangle.

the service side

The service corner captures the services that we, as a supply chain, are delivering to our customer. A dominant service metric in the supply chain is the ‘service level’, whereby we measure in what percentage of cases we deliver according to the agreed target.

However, **service goes far beyond “service level**.” Think for example of the product portfolio or order flexibility. Customers will value a broader product portfolio and attach importance to order flexibility, as it allows them to be more responsive an avoid unnecessary inventory.

service

cost

everything comes at a price

To deliver service, we have costs. We purchase components or raw materials, we manufacture products in-house or externally, we have the cost of warehousing for the finished products and we have the logistics cost of shipping our products to our customers.

focus on working capital

We use **cash as a synonym for working capital**, which we describe as the inventory plus the accounts receivable, minus the accounts payable. Inventory is thereby probably the most difficult aspect of the working capital equation.

Inventory balances with cash. If we were able to sell off €10,000 of inventory and get a cash payment, we would have €10,000 more cash in our bank account. The **accounts receivable** depend on the payment terms and the speed of collection. The **accounts payable** define the amount we still need to pay to our suppliers.

All parts of the equation are connected. Logically, an increase in inventory or receivables increases the cash required, while an increase in the payables towards our suppliers will decrease the cash required.

cash

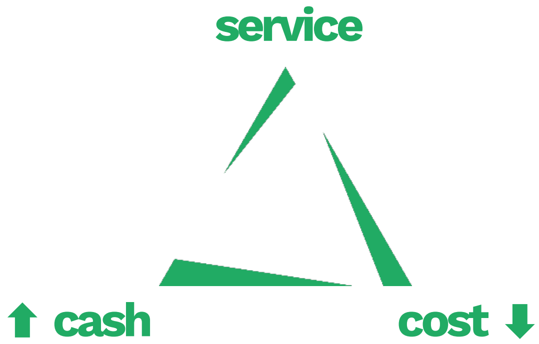
We see working capital reduction programs coming back every 3-5 years in companies. Many companies have launched such programs during the financial crisis.

Prof. dr. Bram Desmet

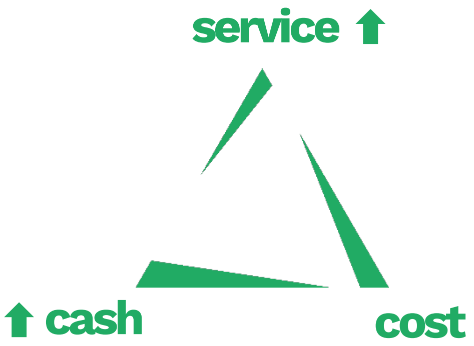
interconnection between the triangle sides

Decisions in one corner of the triangle nearly always automatically impact the other corners. This is also visualized in the figure below.

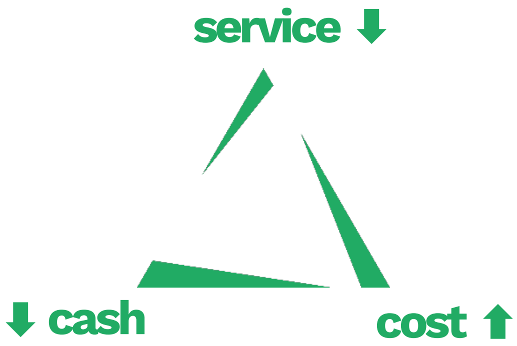
Let’s highlight one of the examples. In a bid to reduce costs, many companies started sourcing in low-wage countries. The downside is that this will increase the average inventory. Likewise, production will strive for longer production runs, as this leads to greater efficiency, which in turn leads to a lower production cost per unit. However, the decrease in costs comes at the expense of extra inventory.



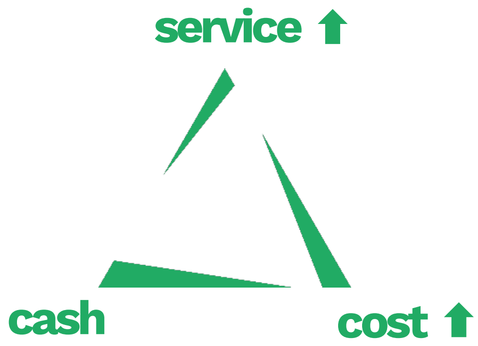
Eg sourcing in the Far East to lower cost, maximize efficiency by bigger batches or levelling production



Eg expanding the product portfolio to increase market share



Eg lower inventory by lowering safety stocks



Eg improve responsiveness by building ‘peak’ capacity

struggling to find balance

If we look at the Supply Chain Triangle, we can **map typical C-level functions to each corner**. Sales and Marketing managers are typically on the service side, while Production, Purchasing and partially Supply Chain are pulling on the cost side.

Before the financial crisis, that was probably about it. There was tension between Sales and Operations, with the inventory acting as a buffer in between. Since the financial crisis, the CFO has become more concerned with working capital. The **CFO will look for a companion** to get the inventory under control, and the **most likely candidate will be the Supply Chain manager**.

The **current reward system** in most organizations **does not encourage working together**. A Sales and/or Marketing manager will typically receive a bonus on the achieved turnover, while a Supply Chain manager, for example, will be judged on his efforts to squeeze the inventory. If Sales and Marketing see the broadening of the product portfolio as strategic for increasing turnover, this will bring tension into the triangle, since a wider product range will have a negative impact on the inventory level. This is just one of the many examples of conflicting interests.

When times are good, there is a little willingness to create alignment, but in periods of economic difficulty, it’s no longer possible to improve on all corners at the same time, which makes it impossible to achieve certain desired outcomes.

quick-win tip

Getting the challenge to **reduce inventory** by double-digit figures?

Be careful in accepting this challenge, since reducing inventory is about creating balance within the triangle.

It’s something you can’t do alone!

Never accept an inventory reduction target in isolation. If the question is simply ‘should we reduce the inventory by 30%?’, say ‘no’. Start the discussion, and look for balance with other targets. For example, is it possible to fade out products when introducing a new one? Only commit yourself to the inventory part when you feel that the targets on each of the angles are aligned and add up to a realistic plan.

aligning the triangle is about optimizing ROCE

The fact that decisions in one corner of the triangle automatically impact the other corners is also the reason why many think that tension within the triangle is unavoidable. However, this shouldn't be the case. The answer lies in **taking an investor's perspective**.

Most companies have growth objectives. Some companies are even so focused on growth that any initiative supporting growth will automatically get approved, e.g. expanding the product portfolio.

The standard rationale could be listed as:

1/ growth

2/ profit

3/ capital employed
(= sum of working capital and fixed assets)

Investors will judge the 'bang-for-their-buck', or, in other words: what do you get in return for every invested dollar? This question also touches upon the solution for the tension within the triangle. Balancing the triangle leads to an optimization of a company's bang-for-their-buck, calculated as the Return on Capital Employed (ROCE). Companies that have a **higher ROCE are more attractive to investors**. As such, **balancing the triangle is a common objective**.

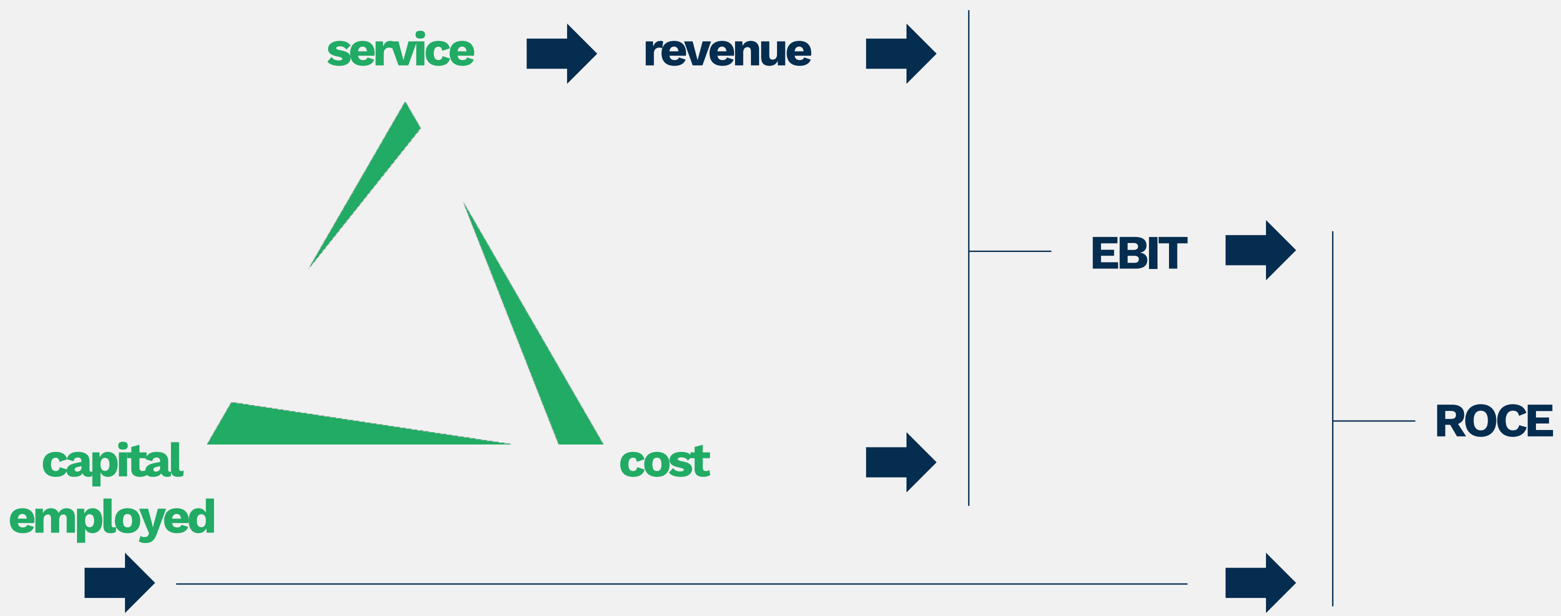
Though growth is good, it should not be a goal in itself. Investors like to see profit, at least in the long term, instead of only increased revenue (driven by the service-side).

How to calculate the bang-for-the-buck (~ROCE)?

- We can combine the service and cost side of the triangle into a profit metric, like EBIT, the Earnings Before Interest and Taxes.

- To also include the cash-side – expressed by capital employed (see ‘A closer look: extending the triangle) – we calculate the ROCE, which equals the EBIT generated over the capital employed.

The ROCE supports the investor’s view while also reducing the tension within the triangle. For example, it’s ok for investors if the EBIT is a bit lower, as long as you need less capital, or vice versa. This is a reasoning that we should be able to extend to the c-level in organizations.



service

- Target service level
    - Fill rate
    - Lead time
- Product portfolio
- Order flexibility

capital employed

- Working capital
    - Inventory
    - Accounts receivable
    - Accounts payable
- Fixed assets

cost

- Operations
    - Logistics
    - Warehousing
    - Manufacturing
    - Purchasing
- Research & development
- Sales, general & administrative

A closer look:
extending the triangle as a next step

There are two possible extensions to the triangle:

1/ Accounting the **non-operational costs** such as R&D and Selling, General and Administrative (SG&A) expenses. These are added to the cost-side.

2/Expanding from **cash to capital employed**. This is the financial term for the sum of working capital and the fixed assets.

Extending the triangle with these more detailed extensions provides a more realistic view on the three sides, and is thus advisable. Furthermore, it will allow you to calculate the ROCE.

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capital employed

- Working capital
  - Inventory
  - Accounts receivable
  - Accounts payable
- Fixed assets

cost

- Operations
  - Inventory write-offs
  - Logistics
  - Warehousing
  - Manufacturing
  - Purchasing
- Research & development
- Sales, general & administrative
- Depreciation & amortization

Consequently, adding fixed assets to the bottom left corner leads into the cost corner to **depreciation & amortization** facet. Besides, keeping inventory translates into **inventory write-offs**, even if companies do their utmost to avoid these.

The above makes the final, extended Supply Chain Triangle look like this.

key takeaways on the Supply Chain Triangle concept

- ✓ The Supply Chain Triangle of service, cost and cash is a perfect framework to break through the functional silos of traditional organizations
- ✓ Decisions affecting one side of the triangle almost automatically impact the other sides
- ✓ The service, cost and cash side can be mapped on the different functions within an organization
- ✓ Typically, there's tension between the different sides (and functions) of the Supply Chain Triangle
- ✓ Balance in the Supply Chain Triangle can be found by focusing on the ROCE, the so-called 'bang-for-your-buck'. Companies that have a higher ROCE are more attractive to investors
- ✓ As a next step, the triangle should be extended from cash to capital employed

Looking forward:
the strategic discussion

Are you interested in how the Supply Chain Triangle concept links into the strategic discussion? Learn how different strategies lead to different trade-offs within the triangle by reading the whitepaper *'Strategy in the Supply Chain Triangle'*.

MORE INFO

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