

Five ways to increase flexibility in manufacturing companies

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Here is how you increase flexibility without adding complexity

Many manufacturers want to become more flexible. Yet the same question often returns: how do you make flexibility tangible on the shop floor? The concept sounds attractive, but in practice it often remains vague. Still, there are clear levers that make production environments faster and more agile. In this article, you discover five practical ways to increase flexibility structurally, without losing control of complexity.

In this article, we discuss five practical levers that help manufacturers improve flexibility: making capacity adjustable, managing variants and complexity, using digitalisation, reducing changeover times and introducing cross-training.

Content

- Defining and measuring flexibility
- Strategy 1: Make capacity adjustable
- Strategy 2: Actively manage variants and complexity
- Strategy 3: Use digitalisation to adapt faster
- Strategy 4: Reduce changeover times
- Strategy 5: Introduce cross-training
- In conclusion

Defining and measuring flexibility

Flexibility has two important dimensions. Volume flexibility shows how easily you can adjust production volumes when demand changes. Mix flexibility describes how smoothly you can switch between different products or variants. Flexibility determines how quickly and efficiently a company adapts to change. That also makes it measurable.

The simplest indicator is the impact on lead time when something changes. Think about:

- A 20% increase in volume
- A new product variant
- A change in the product mix

A system with long lead times reacts slowly. That makes it less flexible. A system with short lead times switches faster and more efficiently. Flexibility and lead time are therefore closely linked. Methods that shorten lead times usually increase flexibility automatically. The cost of handling changes also plays a role. Yet this is often difficult to measure precisely. Additional demand may create overtime costs, while at the same time reducing the number of changeovers. As a result, total costs may even decrease.



Strategy 1: Make capacity adjustable

Volume flexibility strongly depends on how quickly capacity can move with demand. When that flexibility is missing, backlogs and waiting times quickly appear. Many companies only react once problems become visible. That is often where things go wrong. Flexibility mainly comes from deciding beforehand how you will respond.

Respond quickly in the short term

In the short term, you respond to acute issues such as rising backlogs. Overtime is a classic measure. At Scania’s truck factory in Zwolle, the backlog is continuously monitored. As soon as it reaches twelve trucks, equal to around fifty minutes of work, the company decides to extend the next working day by one hour. This keeps the backlog under control.

Look ahead in the medium term

The biggest leverage often sits in the medium term. Here, you do not focus on today, but on what will happen in the coming weeks. An order book that structurally exceeds capacity sends a clear signal. By reacting early through outsourcing, additional shifts or temporary capacity, you prevent the system from slowing down.

The table below shows an example of a flexibility plan.

Capacity utilisation next 4 weeks	Situation	Capacity strategy	Action
> 120%	Structural overload	Expand capacity	Start outsourcing + add extra shift
95% – 120%	Risk of overload	Flex capacity	Plan temporary staff + overtime
85% – 95%	Optimal load	Optimise capacity	Maintenance, training, improvement projects
< 85%	Structural underload	Reduce capacity	Reduce temporary workforce, reallocate staff

Align capacity structurally in the long term

In the long term, Sales & Operations Planning becomes crucial. Here, you align demand and capacity structurally.

Investments also play an important role. Think about:

- Automatic loading systems
- Flexible production cells
- Multi-purpose machines

Companies that are truly volume-flexible do not wait for problems to arise. They anticipate change and decide beforehand how they will react.

Strategy 2: Actively manage variants and complexity

Mix flexibility starts with a strategic decision: how many variants do you want to offer? More variants may seem attractive. They respond better to specific customer needs and often increase sales opportunities. Yet the added value of every extra variant gradually declines. Many companies recognise this challenge. Their product portfolio keeps growing, while efficiency decreases.

More variants increase complexity

Every additional variant increases complexity:

- More changeovers
- More inventory
- More difficult planning
- More exceptions
- Higher coordination costs

There is therefore an optimal number of variants where profitability reaches its maximum. Beyond that point, profitability declines, even if turnover continues to rise.

The figure below shows the relationship between variants, costs and profit.

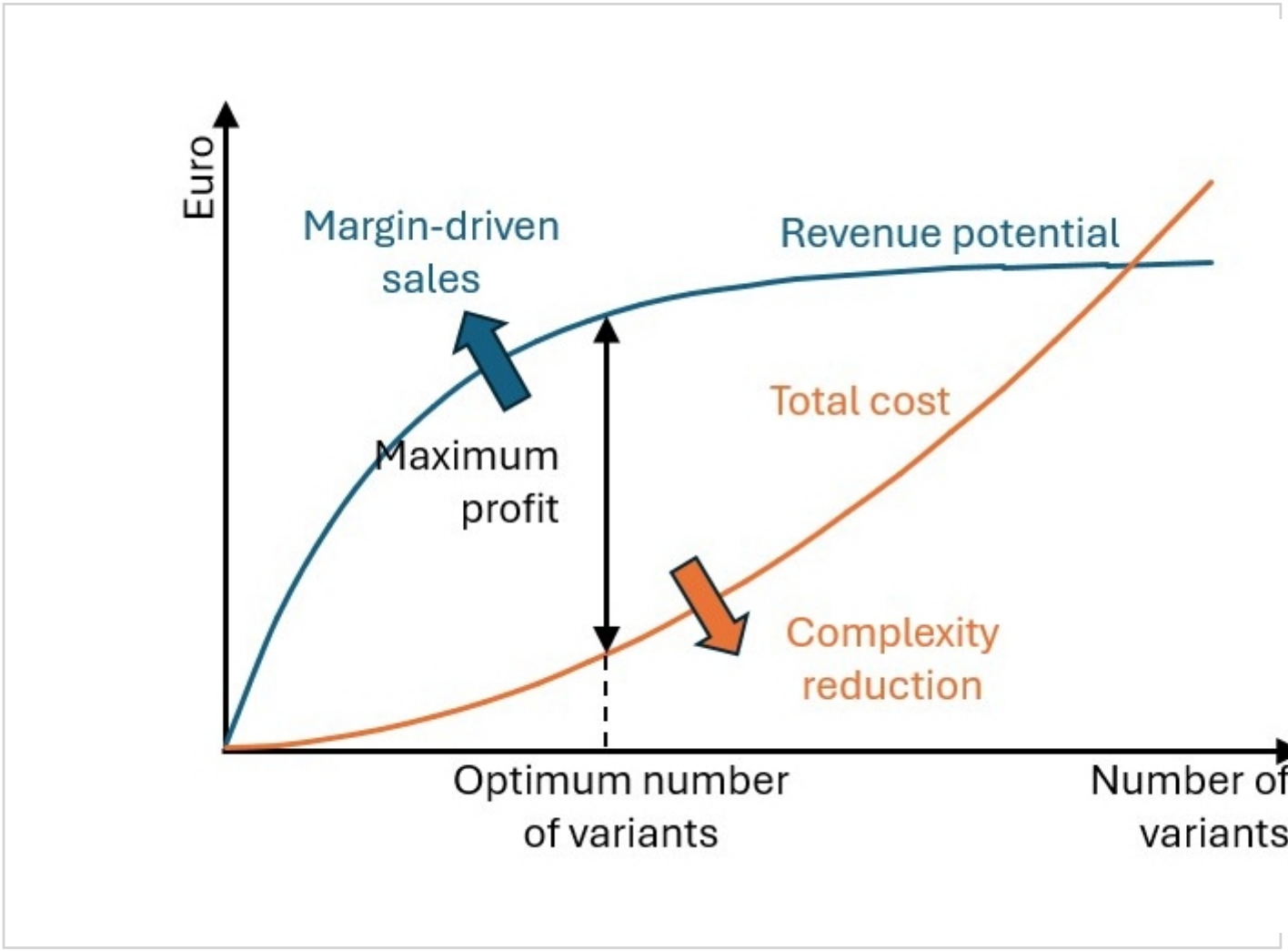


Figure: relationship between revenue, costs and profit when the number of variants increases

Limit the impact on the cost side

The impact of variants does not have to become unmanageable. Companies can reduce complexity through:

- Modular product architectures
- Flexible production equipment
- Smarter standardisation

This makes it possible to offer more variants without costs increasing at the same speed.

Focus sales on margins instead of turnover

Sales also play a key role. When sales teams are driven purely by turnover, they tend to accept every customer request. That often leads to an explosion of variants. Focusing on margins

changes behaviour. Customers are more often guided towards standard solutions. This keeps complexity manageable while improving profitability. Companies struggling with mix flexibility should first decide how much variation they truly want to offer. Without clear choices, complexity often grows faster than the organisation can handle.

Strategy 3: Use digitalisation to adapt faster

Digitalisation increases the flexibility of information processing.

In many companies, the biggest delays are not caused by production itself, but by:

- Quotations
- Bills of materials
- Routings
- Planning decisions

Digitalisation accelerates information processing

Digital tools speed up processes and reduce waiting times.

Product configurators, for example, enable:

- Faster quotations
- Automatic bills of materials
- Automatic routings

Real-time dashboards, digital work orders and system integrations also help companies respond more quickly to change.

Digitalisation also increases complexity

Still, digitalisation remains a double-edged sword. Digital tools make it easier to offer many variants. As a result, complexity can also increase faster. Digitalisation only works well when companies make clear choices about their product mix. Without those choices, technology sometimes reinforces the very problem companies are trying to solve.



Strategy 4: Reduce changeover times

When switching between products takes a lot of time, flexibility automatically decreases. High changeover times lead to:

- Large batches
- Long waiting times
- Slower responses to change

Reducing changeover times changes the behaviour of the entire system. Smaller production runs become possible and orders move through production faster.

SMED as a method for faster changeovers

SMED stands for Single Minute Exchange of Dies. The method helps companies systematically reduce changeover times. A lot of improvement already comes from simple actions:

- Prepare work better
- Standardise tasks
- Clarify responsibilities
- Prepare materials in advance

These steps may sound simple, yet they often reduce changeover times by 30 to 50%.

Strategy 5: Introduce cross-training

When only a few employees can perform certain tasks, every absence or change becomes a risk. Cross-training breaks that dependency. The goal is not to make everyone capable of doing everything, but to create enough flexibility at critical points.

Cross-training improves flexibility and collaboration

Cross-training offers several advantages. When employees master multiple consecutive process steps:

- Handovers decrease
- Lead times shorten
- Collaboration improves

Employees also gain a broader understanding of the entire process. This often leads to better communication and more improvement ideas.

Use a skills matrix and training plan

A skills matrix helps visualise competences and plan training more effectively. The video below shows how to use a skills matrix in practice:

Flexibility does not come from working harder. It comes from designing systems more intelligently. Companies that consciously invest in these five levers respond faster to change without letting complexity spiral out of control. For many manufacturers, that creates a strong competitive advantage today.

Would you like to put this into practice?

Sirris supports companies through training, workshops and guidance on flexible production. In the QRM Silver training, you learn how to improve lead times and flexibility structurally. In a SMED workshop, you work hands-on on reducing changeover times. Sirris also supports companies in selecting and implementing flexible production equipment.

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