

In-house production depth: strategic lever for costs, control and delivery capability

In-house production depth describes the share of value added that a company performs itself rather than passing it to suppliers. It is a central strategic lever in procurement because it determines the cost structure, dependencies and flexibility of the entire supply chain. For buyers and supply chain managers, production depth is therefore not a purely technical topic but a classic make-or-buy field. Those who actively manage it can build resilience, optimise costs and specifically protect core competencies.

Key facts

- In-house production depth typically measures the share of own value added in total output, frequently expressed as a percentage of the cost of materials or of manufacturing costs.
- It is strategically determined through an outsourcing potential analysis or make-or-buy analysis and reviewed periodically.
- High production depth means control and know-how protection, but higher fixed costs and lower flexibility.
- Low production depth reduces fixed costs, but increases supplier dependence and the requirements for supplier de-risking and pre-qualification.
- KPIs such as on-time delivery, inventory plan-versus-actual comparison and Available to Promise (ATP) show whether the chosen production depth is operationally viable.
- Trends such as onshoring and resilience strategies mean that in practice companies are selectively increasing their production depth again.

Definition: in-house production depth

In-house production depth denotes the ratio of value added performed within the company to the total value added of a product or service. It is frequently expressed as a ratio, for example as the share of in-house production costs in manufacturing costs or as the ratio of in-house production to outsourced production in the cost of materials.

Distinction from value-added depth

The term is often used synonymously with value-added depth. In practice, however, a distinction is made: production depth looks at physical production, while value-added depth also covers development services, engineering and service. A mechanical engineering company, for example, may have a low production depth but a high value-added depth in engineering. This distinction is important for strategy work because the two dimensions lead to different make-or-buy decisions.

Quantitative and qualitative perspective

Quantitatively, production depth is measured using cost or hour ratios. Qualitatively, it asks which processes belong to the core business: manufacturing processes with critical process know-how,

inspection-relevant production steps or technologies with competitive relevance should generally remain in-house. The qualitative assessment is often more decisive than the pure cost ratio because it secures long-term competitiveness.

Methods and approach for determining production depth

Production depth is not decided once, but follows a structured decision process. At its centre is the systematic analysis of which components, assemblies and processes should be performed in-house and which should be passed to suppliers.

Make-or-buy and outsourcing potential analysis

The starting point is an outsourcing potential analysis across the entire parts portfolio. Typically, criteria such as costs, volume, complexity, know-how criticality, quality requirements and the supplier market are assessed. Standardised parts with a transparent market argue for outsourcing; safety-relevant or technologically differentiating parts argue for in-house production. The result is a classified parts list that defines the target production depth per product family.

Cost comparison and capacity planning

In the cost comparison, not only unit costs are relevant but also fixed costs, set-up times, material losses, quality costs and capital tie-up. In practice, in-house production is frequently only economical above a certain level of utilisation. The decision is closely interlinked with the planning horizon: short-term capacity peaks are often sourced externally, while long-term baseline load is produced in-house. Negotiation management with potential suppliers also provides benchmark data for the comparison.

Implementation via pilot projects with suppliers

When a production area is spun out, this rarely happens abruptly in practice. A pilot project with suppliers makes it possible to test quality, on-time delivery and communication channels before volumes are transferred. In parallel, contracts are agreed with audit rights, Incoterms EXW or other delivery terms, price adjustment clauses and, where applicable, force majeure provisions. Only after a successful safe launch is the volume transferred in full.

Important KPIs for managing in-house production depth

The chosen production depth must be monitored operationally. Key figures show whether in-house production is working economically or whether there is a need for outsourcing or insourcing.

Cost and value-added key figures

Key figures are the in-house production share of the cost of materials, the capacity utilisation of in-house production and the unit costs in the plan-versus-actual comparison. An inventory plan-versus-actual comparison additionally reveals whether high production depth leads to excessive inventory. In practice, the attribution rate is also considered, i.e. how much of the manufacturing costs actually stems from own performance.

Delivery and quality key figures

With high outsourced production depth, supplier KPIs come to the fore: on-time delivery, complaint rate and the data quality score of supplier master data. The Available to Promise (ATP) rate shows how

reliable availability commitments to customers are – a figure that depends directly on the reliability of upstream suppliers. For delivery schedule calls in accordance with industry standards, call-off and delivery data can be compared automatically.

Management through regular reviews

Best practice is a quarterly review in which production depth, utilisation, costs and delivery performance are assessed together. Deviations lead either to adjustments in the procurement mix or to measures in in-house production. It is important that procurement, production and development interpret the key figures jointly in order to make conflicting objectives visible.

Risks and controls with high and low production depth

Both too high and too low in-house production depth entails specific risks. Effective controls offset these disadvantages.

Risks of high in-house production depth

High production depth ties up capital in plant and personnel, reduces flexibility in the face of demand fluctuations and can lead to manufacturing processes falling behind technologically. In addition, the leverage in negotiation management decreases because less volume is outsourced. Companies should therefore regularly check whether internal capacities are still benchmarkable against the market.

Risks of low in-house production depth

Extensive outsourcing creates dependencies, especially with sole sources and critical upstream products. Typical controls are supplier de-risking measures, dual sourcing strategies, audit rights at the supplier and a structured pre-qualification of new providers. Country risk in procurement must additionally be assessed for global supply chains. Contracts should be adjustable via an amendment if framework conditions change.

Control instruments and supplier management

Proven instruments are supplier evaluation, preferred supplier programmes and defined dunning procedures for orders past their deadline. For PO orders, changes should go through formalised change processes in order to keep production statuses and prices traceable. For outsourced production processes with high criticality, a parent company guarantee can provide additional safeguarding.

Current developments: resilience, onshoring and digitalisation

The assessment of the optimal production depth has shifted in recent years. Supply chain disruptions, geopolitical tensions and energy price fluctuations have accelerated the strategic re-evaluation.

Onshoring and selective insourcing

Many companies in the DACH region are relocating critical production back to Europe or considering selective insourcing. Onshoring frequently increases unit costs, but improves response times and communication proximity and reduces country risk in procurement. The decision is typically made product by product: A-parts with supply chain risk are brought back, C-parts remain external.

Digitalisation of make-or-buy management

Modern ERP and planning systems make production depth continuously measurable: capacity data,

plan-versus-actual comparisons and supplier key figures are available in real time. Product lifecycle management links the production depth decision to the product lifecycle – what is produced in-house during the introduction phase can be outsourced during the maturity phase and vice versa. Catalogue management for externally purchased parts is also gaining in importance because it reduces indirect procurement costs when outsourced production depth is high.

Flexibilisation through 3PL and production partners

Increasingly, companies combine in-house core production with external partners and logistics service providers. Third-party logistics providers (3PL) take over warehousing, picking and transport, so that the production depth of core processes can be optimised independently of logistics management. However, these hybrid models require clear interfaces and joint key figures.

Typical metrics

In-house production share of cost of materials: typically 20–60 %

Depends on the industry; the trend matters more than the absolute value

Capacity utilisation of in-house production: > 80 %

Below this, the relative cost position of buying in improves

Supplier on-time delivery: > 95 %

Decisive with high outsourced production depth

Available to Promise (ATP) rate: > 90 %

Shows the reliability of availability commitments

Practical example

A medium-sized mechanical engineering company with traditionally high in-house production depth comes under pressure from demand fluctuations: its own machining operations are underutilised while lead times for driven components are rising. An outsourcing potential analysis reclassifies the parts portfolio. Building on this, the company implements four measures:

- Core components with process know-how remain in-house; standard parts are outsourced via a pilot project with suppliers.
- New suppliers go through a pre-qualification; contracts include audit rights, price adjustment clauses and defined Incoterms.
- A monthly dashboard with in-house production share, utilisation, on-time delivery and Available to Promise (ATP) manages the mix operationally.
- Critical sole sources are safeguarded through supplier de-risking and dual sourcing.

Conclusion

In-house production depth is more than a key figure: it is the result of strategic make-or-buy decisions and shapes a company's cost structure, resilience and competitiveness. The optimal production depth is product-specific and changes over the lifecycle and with the market and risk situation. Buyers should review it regularly through an outsourcing potential analysis and manage it operationally using clear KPIs. Close coordination between procurement, production and development is important. Those who actively manage production depth instead of letting it grow historically gain a measurable competitive advantage.

Frequently asked questions

What does in-house production depth mean?

In-house production depth describes the share of value added that a company performs itself rather than passing it to suppliers. It is typically measured as a percentage of in-house production relative to manufacturing costs or to the cost of materials. It results from make-or-buy decisions and can be strategically and deliberately managed.

How do you calculate production depth?

The ratio is frequently calculated from in-house production costs divided by total manufacturing costs. Alternatively, production hours or value-added shares serve as the basis. It is important to use a uniform definition across all product areas so that figures remain comparable and trends are interpreted correctly.

When is high in-house production sensible?

High production depth makes sense for core competencies, critical process know-how, safety-relevant parts and high, stable capacity utilisation. It provides control over quality and deadlines, but causes higher fixed costs and reduces flexibility. In practice, it is therefore deliberately limited to competition-relevant areas.

What are the disadvantages of low production depth?

Low production depth increases dependence on suppliers, especially with sole sources. Risks include supply failures, quality problems and loss of know-how. Countermeasures typically include dual sourcing, audit rights, pre-qualification and supplier de-risking measures.

How does in-house production depth relate to make-or-buy?

Make-or-buy is the decision process that determines production depth. For each part or process, it is analysed whether in-house production or outsourcing is more cost-effective and lower-risk. The sum of these decisions results in the actual in-house production depth, which should be reviewed periodically.

Is in-house production always cheaper than buying in?

No. In-house production causes fixed costs, capital tie-up and quality effort, which quickly become more expensive than purchasing when utilisation is low. The comparison must consider full costs, opportunity costs of capacity and risk costs. In practice, the answer depends strongly on volume and utilisation.