Throughput time: measuring and controlling from order receipt to delivery

Throughput time refers to the period that an order, material or product requires from the start of a process to its completion. In industrial procurement it often covers the stretch from receipt of the order by the supplier to receipt of the goods by the customer. As a central supply chain metric, it directly influences a company's availability, tied-up capital and delivery capability.

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Key facts at a glance

01 Throughput time measures the real period between process start and process end, for example from order release to receipt of goods.

02 It typically consists of lead, processing, waiting and transport times.

03 Shorter throughput times reduce inventory and tied-up capital and improve the delivery service level.

04 In practice, a distinction is made between planned (calculated) and actual (measured) throughput times.

05 Waiting and dwell times frequently account for the largest share of total throughput time.

06 In procurement, throughput time is an essential criterion in supplier selection and supplier benchmarking.

Definition: throughput time

Throughput time (in English Lead Time or Cycle Time) is the measured time that an object – such as a customer order, a production order or a parcel of goods – requires to pass completely through a defined process segment. It is therefore one of the most fundamental metrics in production planning and logistics.

Distinction from lead time and reorder time

From the perspective of the ordering process, lead time describes the planned period from placing the order to the expected receipt of goods. Throughput time, by contrast, measures the actual outcome across all process steps. Reorder time extends the view further to include demand identification and order processing. In practice the terms are often used synonymously; for robust evaluations, however, the company should clearly define the interfaces.

Components of throughput time

A throughput time consists of several components that can be controlled with varying degrees of success. Typically the non-value-adding components dominate.

- Lead and set-up times before the actual processing
- Processing and transport times with value creation
- Waiting, dwell and interaction times between the steps
- Inspection and approval times, for example during incoming inspection or Certificate of Analysis

Methods and approach: capturing and shortening throughput times

Effective reduction of throughput time begins with clean measurement along the entire process. Only once waiting and transport times have been made visible can targeted levers be identified, rather than merely increasing the processing speed of individual machines.

Measurement along the process chain

The basis is a seamless time capture with clearly defined start and end points, such as order release, production start, despatch and goods receipt. Modern supply chain analytics makes it possible to bring together data from ERP, inventory management and supplier portals. It is important to evaluate planned and actual figures separately in order to uncover systematic planning deviations.

Levers for shortening

Proven approaches range from lot size reduction and improved material flow planning to close coordination with suppliers. In the sourcing process, a supplier's realistic throughput time should be examined as a hard selection criterion alongside price and quality. For standardised catalogue and C-parts procurement, punchout integrations can accelerate the ordering process and thus reduce the process-related throughput time before the order.

Capacity planning as an early warning system

With rough cut capacity planning (RCCP), bottlenecks can be identified at an early stage which would otherwise later become visible as extended throughput times. A defined freeze fence protects the short-term planning horizon from constant changes and thereby stabilises the processes. Together, both reduce planning uncertainty, which experience shows is one of the biggest drivers of throughput

time.

Important KPIs around throughput time

Throughput time is rarely considered in isolation, but is evaluated in combination with service and inventory metrics. Only then can it be assessed whether a reduction actually leads to better delivery performance and lower tied-up capital.

Core KPIs in combination

In addition to absolute throughput time, the plan deviation, the delivery service level and inventory and coverage metrics are primarily relevant. A low delivery service level with short throughput time indicates problems with delivery reliability; high inventory indicates excessive safety buffers.

- Average and maximum throughput time per part or supplier
- Plan-to-actual deviation of throughput time as a reliability measure
- Delivery service level (OTIF / service level) as an outcome metric
- Inventory coverage and tied-up capital as a financial consequence metric

Benchmarking and target values

A supplier benchmark makes throughput times and delivery reliability of different suppliers comparable. Reference values differ greatly by industry and product: for standard procurement parts, planned throughput times are frequently in the range of days to a few weeks, and for complex components or tools in the range of several months. Blanket target values are therefore of little significance; the plan deviation and development over time are decisive.

Risks and controls for throughput time

Poorly planned or unstable throughput times lead to inventory peaks, delivery problems and expensive expedited measures. Procurement and the supply chain therefore need clear control mechanisms and escalation paths.

Typical risk areas

Supplier lead times communicated too optimistically, inaccurate demand planning, lengthy approval behaviour within one's own organisation and a lack of transparency at sub-suppliers are among the most common causes of deviations. Import processes with customs documents such as ATA Carnet also noticeably extend the realistic throughput time compared with pure transport time and must be taken into account in materials planning.

Controls in the ordering and approval process

A lean procurement approval workflow prevents internal approvals from unnecessarily extending throughput time. Match-and-merge rules for invoice and goods receipt reconciliation reduce manual

rework. Binding framework agreements such as a Master Service Agreement (MSA) can agree reaction and delivery times on a binding basis, as can clearly defined supplier statuses in the vendor master data.

Supplier-side qualification and development

Suppliers with repeatedly unreliable throughput times should undergo requalification or be replaced step by step via the Approved Vendor List (AVL). For quality problems with supply impact, an 8D containment process helps to secure supply in the short term while the root cause is eliminated. Preferred suppliers with demonstrably stable delivery reliability receive higher volumes in return.

Current developments: throughput times in a changed environment

Supply chains have been under pressure to adapt for years: disruptions, geopolitical uncertainties and a growing awareness of resilience are changing the way companies plan and evaluate throughput times.

Resilience instead of pure speed

Today, many companies deliberately accept certain buffers or multiple sources of supply in planning in order to safeguard against failures. Reshoring and regionalisation fundamentally change transport times: what appears longer at first glance may nevertheless mean shorter and more reliable throughput times in terms of overall stability. Force majeure clauses in contracts are gaining in importance in order to have clear provisions in place in the event of disruptions.

Digitalisation and transparency

Digital supplier interfaces, track-and-trace and supply chain analytics enable considerably finer observation of throughput time than was possible years ago. In the supplier's order-to-cash process, one's own procurement speed is reflected directly; both sides benefit from reliable data. Increasingly, real-time transparency is desired instead of retrospective STATISTICS evaluations.

Strategic integration into category management

In category management, throughput times should be anchored as a fixed criterion in the category vision and the category playbook. Governance in category management ensures that agreed measures – such as dual sourcing or lot size strategies – are actually implemented and regularly reviewed. Idea evaluation and continuous improvement complete the approach.

Typical metrics

Metric	Typical value

Average throughput time	per part / supplier (basis: actual measurement) *Comparison over time is more meaningful than absolute target values.*
Throughput time plan-to-actual deviation	typically < ±10 % *Measures the reliability of the planned lead time.*
Delivery service level (OTIF)	often > 95 % as a target *An outcome metric that depends on delivery reliability and throughput time stability.*
Proportion of waiting/dwell times	in practice often > 50 % of total throughput time *Identifies the greatest potential for reduction.*

Practical example

A medium-sized mechanical engineering company noticed that, despite short processing times at the supplier, the actual availability of steel parts was regularly worse than planned. A structured analysis showed that around two thirds of the total throughput time was attributable to waiting, inspection and transport phases, not to manufacturing itself. The company responded with a combined package of process, data and supplier measures.

- Throughput time measurement with defined start and end points introduced via ERP and the supplier portal
- Approval process in procurement shortened through a lean procurement approval workflow
- Supplier benchmark carried out for critical parts and two preferred suppliers established with a framework agreement (MSA)
- Freeze fence introduced in the short-term planning horizon to reduce constant changes and the resulting waiting times

Conclusion

Throughput time is more than a logistics metric: it connects procurement, production, logistics and finance and shows how reliably a supply chain actually operates. What matters is not the absolute value but the plannability and deviation over time. Those who make waiting and transport times visible, plan capacities realistically and involve suppliers on a binding basis can reduce throughput times in the long term without jeopardising service or quality. In combination with metrics such as the delivery service level and inventory development, this produces a robust picture of supply chain performance. For technical buyers, throughput time is therefore one of the central evaluation and negotiation criteria in the sourcing process.

Frequently asked questions

? What does throughput time mean in the supply chain?

Throughput time is the actual period from the beginning to the end of a process, for example from receipt of the order by the supplier to receipt of the goods. It includes, alongside processing, waiting, transport and inspection times. In procurement it serves as a central planning and evaluation metric for suppliers.

? How does throughput time differ from lead time?

Lead time is the planned or calculated time until the expected receipt of goods and is used for materials planning. Throughput time measures the actual outcome across all process steps. Both figures should be evaluated separately in order to identify deviations from plan.

? How can throughput time be shortened?

The main levers are reducing waiting and dwell times, smaller lot sizes, leaner internal approval processes and reliable coordination with suppliers. More stable planning with a freeze fence and early capacity planning (RCCP) also help. First, however, throughput time should be measured properly in order to identify the biggest drivers.

? Which KPIs relate to throughput time?

The core KPIs are average and maximum throughput time, the plan-to-actual deviation and the delivery service level (OTIF). In addition, inventory coverage and tied-up capital are considered in order to assess the financial impact. For supplier comparison, a supplier benchmark is suitable for relational comparison.

? Why is throughput time important for buyers?

It determines how early orders must be placed, how much safety stock is needed and how flexibly a company can respond to changes in demand. Unreliable throughput times cause expedited orders, additional costs and delivery problems. That is why it feeds into supplier evaluation and sourcing decisions.

? What is a good throughput time?

There is no universally valid target value, as it depends heavily on the product, industry and procurement route. Standard parts are often in the range of days to weeks, complex components in the range of several months. Reliability and development over time are the decisive factors.

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