

Amazon - How Much Fulfillment Capacity Should the Company Keep?

Internal ID: S&F-STR-044

Topic: Operations Strategy, Capital Allocation, Competitive Strategy

Industry: Broadline Retail

Source: Strategy & Finance

Publication date: 5 October 2026

License: Not specified

Decision date and information cutoff: 3 February 2023

Decision scope: Amazon's fulfillment-network capacity and productivity

Case convention: This is an author-created management decision exercise. The role and alternatives are hypothetical; company disclosures are historical. No private deliberations are represented.

The decision

On 2 February 2023, Amazon CEO Andy Jassy described a mismatch between capacity decisions made in 2020 for anticipated 2022 demand and demand that later developed. He said Amazon had “more capacity than we needed” in early 2022, and that the company had delayed some builds and mothballed some facilities while reviewing its investment needs. The statement came from a public earnings-call transcript reproduction, not a facility-level utilization report. The company did not disclose how much capacity was excess, where it was located, or what it cost to exit. [S2]

The next day, Amazon filed its FY2022 Form 10-K. Net sales had grown, but North America reported an operating loss and Amazon-defined free cash flow was negative. The filing also described the network as part of the company’s offer of selection, in-stock availability, and fast, reliable delivery. It warned that poor demand forecasting can leave the company with either excess capacity or too little capacity to serve customers. [S1]

You are a **hypothetical senior operations and capital-allocation leader** preparing a recommendation for Amazon’s next planning cycle. You must decide how to manage the capacity already in the network and commitments still in progress. The public information set closes at the end of 3 February 2023. No regional or facility-level utilization, lease terms, route maps, or service results are provided.

Assignment: Recommend one of three approaches: (A) accelerate capacity reductions and defer or exit more projects; (B) hold the current footprint while improving utilization and productivity; or (C) selectively reconfigure the network, protecting high-value capacity while deferring or repurposing weaker nodes. State what management should do first, what evidence should govern irreversible decisions, and what would cause you to change course. You may combine actions, but explain the sequence and trade-offs.

The network and the customer proposition

Amazon describes its consumer offer in terms of selection, price, and convenience, including fast and free delivery and timely service. Orders are fulfilled through operated North American and international networks, co- and outsourced arrangements, digital delivery, and physical stores. Those are company-described capabilities; the public filing does not establish the return earned by each facility or channel. [S1]

The network serves more than one purpose. Facilities can place inventory nearer to customers, support a broad selection and in-stock availability, and help control the speed and cost of delivery. They can also add rent, labor, maintenance, and transportation costs. A facility may have spare capacity in one process or season while remaining important as a sortation link, geographic buffer, or source of peak-period resilience. Total square footage or a company-wide utilization average would not by itself reveal which nodes create value.

Amazon's own risk disclosure captures the two-sided problem. A forecasting or network-optimization failure can leave it with excess capacity, higher expense, or impairment charges; insufficient capacity can interrupt service and also raise costs. Labor availability and productivity can further limit what nominal capacity can deliver. [S1]

The financial pressure

Amazon's FY2022 results sharpen the capital-allocation question, but they do not identify the network's standalone economics.

Exhibit 1. Selected Amazon results

USD billions, except growth; fiscal years ended 31 December. Company-reported unless noted.

Measure	FY2021	FY2022
Net sales	\$469.8	\$514.0
North America net sales	\$279.8	\$315.9
North America operating income (loss)	\$7.3	\$(2.8)
International operating income (loss)	\$(0.9)	\$(7.7)
AWS operating income	\$18.5	\$22.8
Shipping costs	\$76.7	\$83.5
Fulfillment operating expense	\$75.1	\$84.3
Cash capital expenditures	\$55.4	\$58.3
Operating cash flow	\$46.3	\$46.8
Amazon-defined free cash flow	\$(9.1)	\$(11.6)

Sources: Amazon FY2022 Form 10-K, Item 7, segment sales p. 23 and segment operating income p. 24; shipping costs p. 25; fulfillment expense p. 25; capital expenditures p. 22; free-cash-flow reconciliation pp. 27-29. Values are rounded from reported amounts. FY2022 net sales grew 9% as reported and 13% excluding foreign-exchange effects. [S1]

North America moved from operating income to loss while sales increased. Amazon attributed the deterioration to several factors, including fulfillment and shipping costs, network investment, transportation, wages and incentives, technology and content, and other expense growth. The segment result is not a direct measure of excess network capacity. [S1]

The two expense lines in Exhibit 1 should not be added together as if they were separate network-cost pools. Shipping costs include costs associated with sortation and delivery centers and transportation; fulfillment expense spans facility operations and staffing, physical stores, customer service, payment processing, and other items. Both lines increased, but neither isolates a building's avoidable cost or the cost of serving an additional order. [S1]

Cash capital expenditures rose to \$58.3 billion. Amazon said principal uses included technology infrastructure-most of which supported AWS growth-and additional fulfillment-network capacity. The filing did not allocate this total to retail facilities. [S1]

Amazon's operating cash flow was \$46.8 billion and net purchases of property and equipment were \$58.3 billion, yielding its reported negative \$11.6 billion free-cash-flow measure. Amazon cautions that this measure omits debt principal, acquisitions, and other items; it is not cash remaining for discretionary use. [S1]

What the evidence can and cannot tell management

Management's 2 February statement is a timely signal, but not a map of where action should be taken. The transcript reproduction records Jassy's account that demand assumptions behind the 2022 capacity plan had changed and that Amazon had delayed builds and mothballed some facilities. It does not establish measured utilization, how long excess capacity would last, or whether the mismatch was uniform across regions. The primary 10-K separately identifies both excess and insufficient capacity as risks. [S1]-[S2]

Academic research offers mechanisms for evaluating the choice, not a 2023 savings estimate. Houde, Newberry, and Seim study Amazon's U.S. fulfillment network from 1999 through 2018. Their model finds a tension between shorter shipping distances and denser networks on one side, and facility, labor, rent, and congestion costs on the other. Their preferred estimate associates each additional 100 miles of shipping distance with \$0.34 higher average shipping cost per order (95% confidence interval \$0.26-\$0.49). The estimated sortation-cost effect is about \$0.52 lower per order, but its 95% interval runs from about \$0.91 lower to \$0.01 higher, including zero. [A1]

In a modeled 2018 counterfactual, removing sortation centers lowered rent and wages by 7% but raised average total fulfillment cost by 11%, as shipping expense increased. Table VII displays modeled average total cost per order of \$2.71 in 2000 and \$1.11 in 2018, a decline of about 59% using the rounded figures; the article's prose reports 55%, so the displayed values and prose do not reconcile exactly. These are historical model estimates, not observed 2023 costs or predictions for a particular closure. The sample ends before the pandemic expansion. [A1]

Holmes finds distribution-density benefits in Walmart's historical store and distribution-center network. His estimate is \$3.50-\$3.67 thousand in 2005 dollars per mile per store-year, with wider uncertainty bounds. It supports the general possibility that location and network density matter; it is not an Amazon warehouse coefficient. [A2]

McDonald and Siegel's investment-timing model explains why waiting can have value when a commitment is difficult to reverse and future returns are uncertain. Waiting is not automatically preferable: a firm must also consider the cost of delayed service, constrained capacity, and lost demand. Their model does not quantify Amazon's network spillovers, customer effects, or lease

obligations. [A3]

Competitors take different approaches

Amazon is not the only retailer competing on digital convenience. Its rivals' disclosures show that customer-facing assets may serve multiple roles, though their measures are not directly comparable to Amazon's.

Walmart's FY2023 third-quarter filing said eCommerce contributed about 1.0 percentage point to U.S. comparable-sales growth and 0.8 point at Sam's Club, primarily through pickup and delivery, and curbside and ship-to-home, respectively. Under Walmart's definition, the eCommerce impact on comparable sales also included other digitally initiated transactions and certain offerings such as Walmart Connect. Walmart reported shifting capital toward supply chain, customer-facing initiatives, technology, and remodels, and away from new store and club openings. These disclosures show one rival investing in existing-network capabilities; they do not establish the economics Amazon would achieve with the same mix. [S3]

Target reported that stores fulfilled 96.8% of its third-quarter FY2022 sales, including in-store purchases and digital orders fulfilled through store shipping, pickup, Drive Up, and Shipt. Digitally originated comparable sales grew 0.3%, compared with 3.2% for store-originated comparable sales. Target cautioned that its sales measures could not be decomposed among macroeconomic, competitive, and consumer factors. Its figures illustrate a hybrid asset model, not a like-for-like efficiency comparison. [S4]

Walmart also marketed an InHome delivery add-on at \$7 per month or \$40 per year on top of Walmart+, and said the service expansion would nearly double its footprint. The announcement documents a rival convenience offer, not adoption, speed relative to Amazon, or profitability. [S5]

Three choices

A. Accelerate contraction. Defer or cancel more planned projects and identify opportunities to exit or repurpose existing facilities. This approach could limit future investment and reduce fixed costs. It could also incur exit charges, lengthen routes, reduce seasonal slack, shift volume into constrained nodes, or weaken delivery promises. The case contains no project commitments, facility lease terms, or regional service data with which to estimate those effects.

B. Hold the footprint and improve utilization. Maintain current geographic reach while improving routing, inventory placement, labor scheduling, throughput, and use of existing facilities. This could preserve customer coverage and allow the company to learn about demand after the shock. It may leave avoidable fixed costs in place, require further productivity investment, or defer necessary action. "Improve utilization" needs a time limit and measures that do not sacrifice service quality.

C. Selectively reconfigure. Protect nodes whose location, role, or customer contribution warrants capacity; defer or repurpose projects and sites with weaker evidence of strategic value. This can distinguish network roles instead of treating all capacity alike. It requires granular data and coordinated execution, which the public information packet does not supply. It is not automatically a lower-risk compromise.

These actions differ in reversibility. A project not yet started may be easier to defer than a live facility is to close. A facility's accounting impairment is also not the same as its future cash cost. Management would need to separate sunk costs, avoidable costs, remaining commitments, transition costs, and network effects before comparing alternatives.

Recommendation

Prepare a decision memo that selects an approach or a sequence across approaches. Identify the assumptions behind your choice. Explain the strongest case against it and name the evidence that would reverse your recommendation.

Your recommendation should address:

1. Which commitments can be paused or changed before making an irreversible decision about operating sites?
2. How should management weigh avoidable facility costs against added transport, labor, inventory, service, speed, and peak-capacity effects elsewhere in the network?
3. What measures should be reviewed by facility role and region, and over what period? Include both cost and customer-service measures.
4. How should management account for demand uncertainty and the value or cost of waiting?
5. What information does the public record leave unresolved, and what analysis should be required before approving a closure, deferral, or new capacity investment?

Do not calculate a closure target or savings forecast from the aggregate figures or historical academic estimates in this case. If you introduce assumptions in your memo, label them and show how they affect your decision.

Sources and conventions

S1. Amazon.com, Inc., **FY2022 Form 10-K**, accession 0001018724-23-000004, filed 3 February 2023; fiscal year ended 31 December 2022. Cited locators are Item 1 p. 3; Item 1A p. 10; Item 7 pp. 19-29.

S2. Amazon.com, Inc., **Q4 2022 earnings-call transcript reproduction**, 2 February 2023, CEO/CFO Q&A. This is a third-party transcript reproduction of a public call; capacity comments are attributed management testimony, not independent measurement.

S3. Walmart Inc., **FY2023 Q3 Form 10-Q**, accession 0000104169-22-000083, filed 1 December 2022; Note 7 p. 16 and Item 2 MD&A pp. 17-20. Walmart's segment eCommerce and comparable-sales measures have distinct scopes.

S4. Target Corporation, **Q3 FY2022 Form 10-Q**, accession 0000027419-22-000037, filed 23 November 2022; Item 2 MD&A p. 15.

S5. Walmart, **"Walmart and InHome Combine to Become the Ultimate Membership"**, 6 July 2022.

A1. Jean-François Houde, Peter Newberry, and Katja Seim, "Nexus Tax Laws and Economies of Density in E-Commerce: A Study of Amazon's Fulfillment Center Network," *Econometrica* 91, no. 1 (2023): 147-190, **article**. Cited findings: Sections 4-5 and Tables VI-VII. U.S. network evidence through 2018; modeled estimates and counterfactuals.

A2. Thomas J. Holmes, "The Diffusion of Wal-Mart and Economies of Density," *Econometrica* 79, no. 1 (2011): 253-302, **article**. Cited estimate: Table XI, p. 285. Historical Walmart store/distribution-center system; not an Amazon cost estimate.

A3. Robert McDonald and Daniel Siegel, "The Value of Waiting to Invest," *The Quarterly Journal of Economics* 101, no. 4 (1986): 707-727, **article**. Cited mechanism: Section III and simulation

discussion. General model, not an Amazon-specific investment rule.

All information after 3 February 2023 is excluded. Amazon's April 2023 shareholder letter and later network plans, implementation, and outcomes are not part of the student case.