

A forecasting test tied to an ordering decision

Proposed discussion brief · ARA7 · No project or partner commitment yet

Question and decision

Can a frozen forecasting method improve an existing ordering forecast on identical held-out items, locations and dates? The initial decision is whether a partner-approved backtest supports a prospective ordering trial. Forecast accuracy alone cannot establish profit, avoided stockouts or an operating benefit.

Why this is worth discussing

The retained evidence shows research in operations and analytics and patent subjects in checkout, product ordering and delivery. These are leads for applied work. The industry's employment counts do not enumerate analytics jobs, and patents do not establish an existing university partnership or permission to use operating records.

Proposed test

Choose one decision, item/location cohort and forecast horizon with the operating user. Freeze the existing comparator and candidate method before the outcome window. Use identical evaluation records and record issue times, missing observations, promotions and assortment changes. Historical evaluation must prevent training leakage. A live trial requires a separate agreement before ordering changes are made.

Main measure: $WAPE = 100 \times \text{sum of absolute differences between observed sales and frozen forecasts} \div \text{sum of observed sales}$. An all-zero-sales denominator leaves WAPE undefined. Include zero-sales rows in the agreed cohort; disclose missing records and stockout-censored sales. Observed sales are not unconstrained demand. Report item/location/time variation and the user's service and cost criteria alongside forecast error.

Information and access needed

- Item and location identifiers; outcome dates; forecast issue times and horizons; frozen comparator and candidate forecasts.
- Observed sales; stockout/availability flags; missing-record reasons; promotions and relevant assortment or operating changes.
- A named ordering decision owner, authorized data steward, evaluation lead and security/access requirements.
- Agreement on permitted records, disclosure, model/results ownership, the acceptance threshold and the decision after the backtest.

What needs a partner answer

Which ordering decision is costly enough to test? What records and existing forecasts can be shared? What service/cost conditions would justify a prospective trial? Baseline, numeric target, accepted owner, budget and dates remain unset until agreed.

Possible discussion route: Walton College's Supply Chain Management Research Center publicly describes industry collaboration and applied research. Staff availability, a specific partner, usable data and any agreement to support this test still need confirmation.

Sources: retained research/industry context; USPTO US10028599B2 and US12100387B2; [official supply-chain center](#). Public service descriptions establish a route for discussion, not accepted responsibilities.

Partner reply sheet: Forecasting and ordering test

For the user to share · ARA7 · Proposed discussion only

A short note to send with the brief

We are reviewing a possible applied research test for Arkansas's S&T plan. The attached brief describes a proposed question, comparison and evidence needs. Could you help us decide whether it addresses a problem you would act on? An initial reply can describe the problem, available records and restrictions without attaching operating data. This is a scoping conversation, not a request to accept a funded project.

Questions for the operating partner

1. What recurring problem or decision matters, and what happens if it remains unresolved?
2. Who can authorize a test and act on the result? Who controls the relevant records?
3. Can we agree the ordering decision, item/location cohort, forecast horizon and frozen comparator before evaluation?
4. Which observations, dates and comparison are available? What is missing, restricted or costly to obtain?
5. What result, with what service/quality/cost safeguards, would justify the next decision?

Questions for the research or facility host

1. Who has the methods and time to do the work? Which equipment, staff and access terms can you confirm?
2. What review, data-use, disclosure and intellectual-property arrangements are needed for this test?
3. What costs, lead times and limits apply? Which responsibilities are you willing to accept in writing?

Record the answer before advancing

Item	Partner response
Organization, respondent role and response date	To be supplied
Problem and decision owner	To be confirmed
Data/facility access and supporting evidence	To be confirmed
Agreed cohort, baseline and comparison	To be agreed
Success threshold and safeguards	To be agreed
Accepted responsibilities, costs and timing	To be agreed
Next decision and next conversation	To be agreed

Current status: no partner response, accepted owner, usable access, measured baseline, numeric target or operating result has been received. Public capability descriptions and patent examples are discussion leads. Complete this sheet from the partner's actual response; an unanswered field is not zero activity or acceptance.