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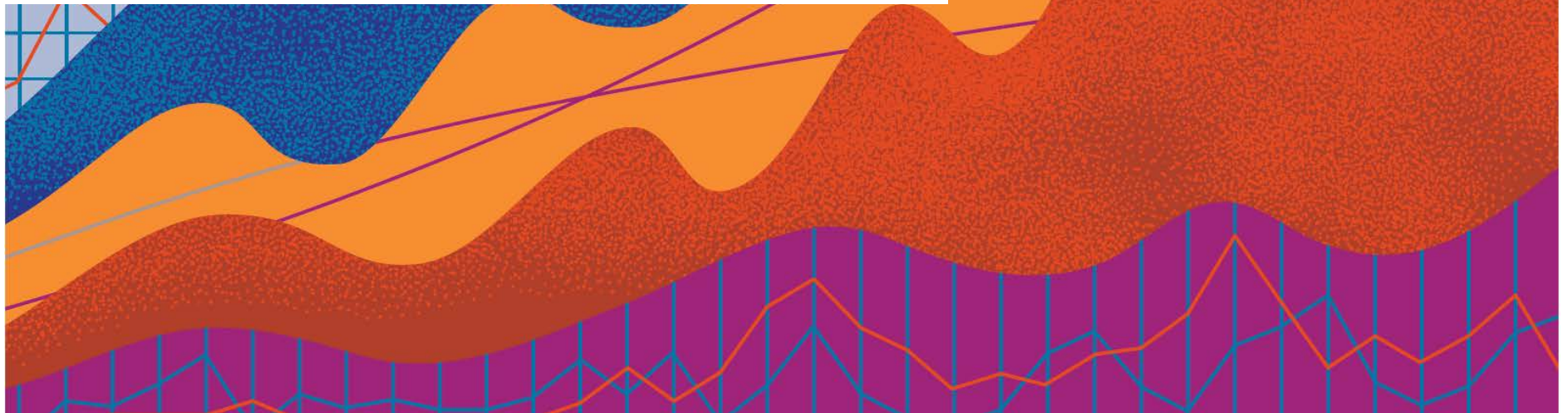
AFP® FP&A Guide to

DRIVER-BASED MODELS AND PLANS

APPROACH TO BUILDING THE MODEL

Driver-based models and plans use a small number of inputs to forecast an array of financial outputs.

They establish relationships between key operational drivers (e.g., volume, rates, conversion ratios, costs), external factors (e.g., markets, economics), and anticipated financial outcomes. Driver-based models prioritize speed and simplicity by focusing on critical business drivers and do not require exhaustive GL account detail.
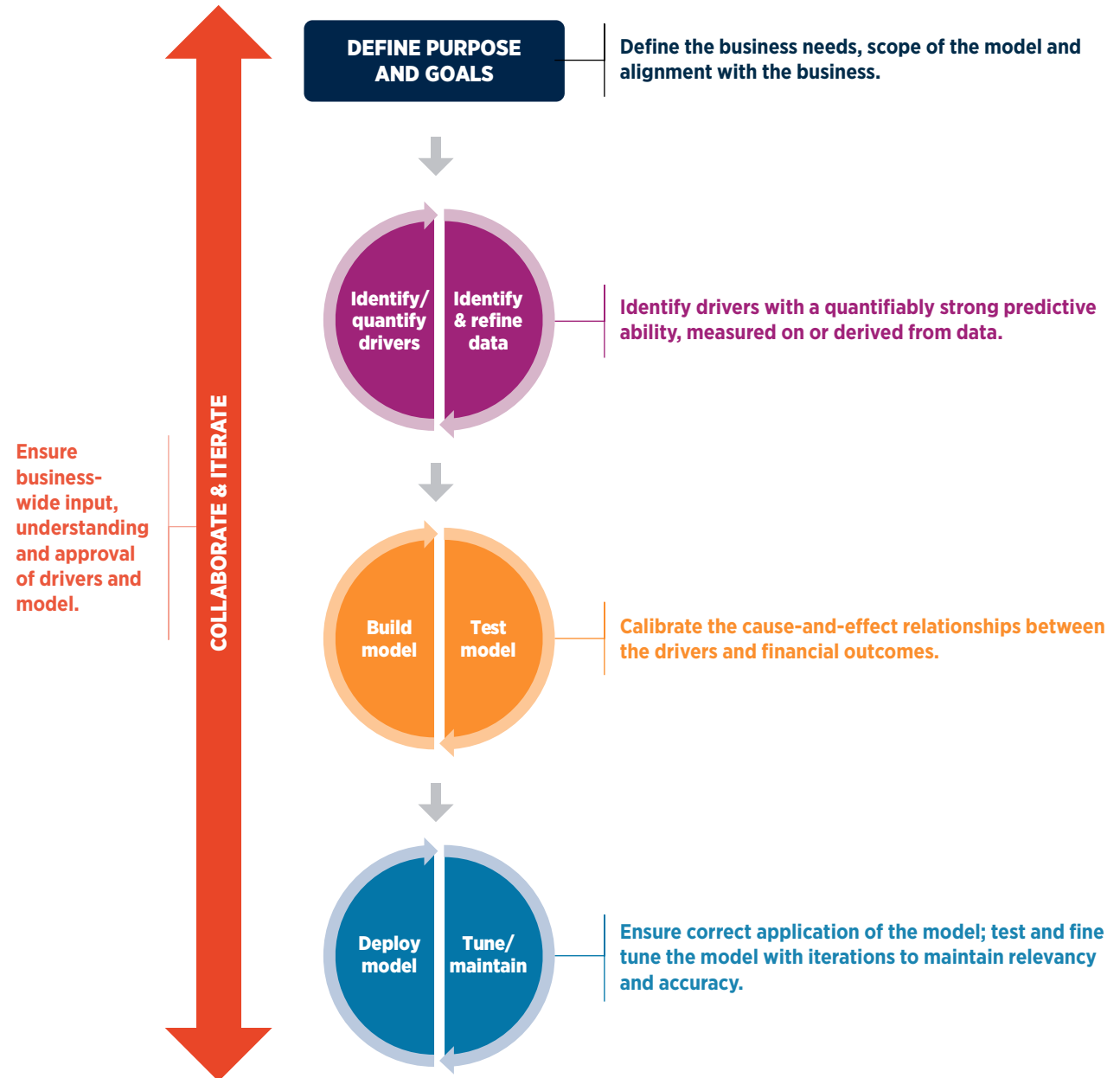
Benefits:

- **Speed.** Fewer variables requires less time to update.
- **Alignment.** Consistent measurement and communication across the business will also help finance perform in their seat at the table.
- **Focus and efficiency.** Spend effort where it has the most benefit.
- **Alternative planning.** Quickly apply to scenarios, sensitivities, rolling forecasts, risks & opportunities, etc.

Risks:

- **Reflect** past relationships forecasted onto the future.
- **Purely formulaic models may lack human understanding** of business context.

This study assumes best practices for modeling are understood and focuses on creating and using drivers.

COLLABORATE & ITERATE

DEFINE PURPOSE AND GOALS

Define the business needs, scope of the model and alignment with the business.

Identify/ quantify drivers — **Identify & refine data**

Identify drivers with a quantifiably strong predictive ability, measured on or derived from data.

Ensure business-wide input, understanding and approval of drivers and model.

Build model — **Test model**

Calibrate the cause-and-effect relationships between the drivers and financial outcomes.

Deploy model — **Tune/ maintain**

Ensure correct application of the model; test and fine tune the model with iterations to maintain relevancy and accuracy.
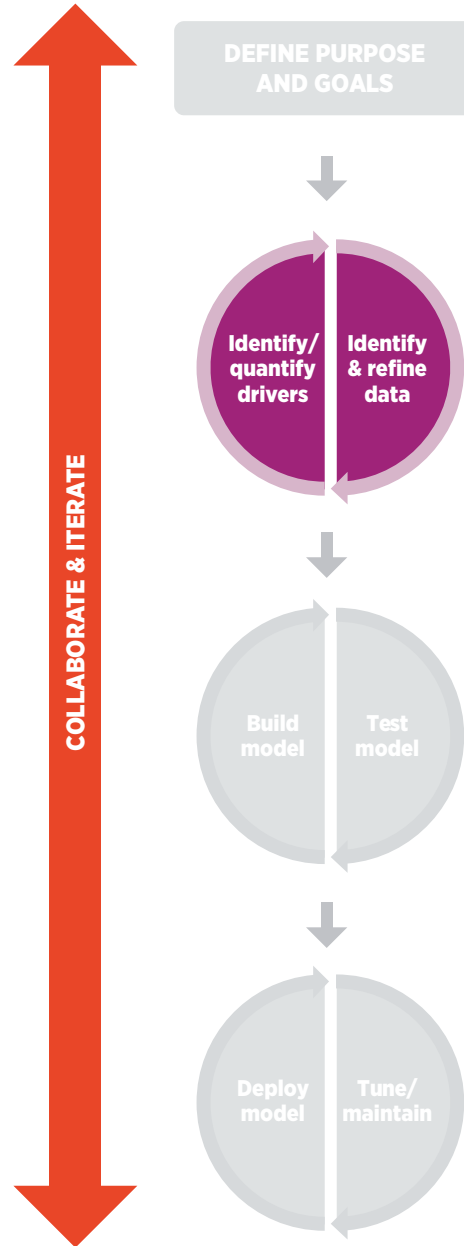
IDENTIFY AND QUANTIFY DRIVERS

Collaboration

Ensure business-wide input, understanding, and approval of drivers and model. Driver-based planning requires collaboration across departments. Avoid working in silos; involve operational teams in the identification and validation of drivers. Lack of collaboration can lead to models that don't accurately reflect the business reality.

"These models enabled proactive decision-making by clarifying the cause-and-effect relationships between business drivers and financial performance, and by fostering a culture of data-driven decision-making."

—HEAD OF FINANCE TRANSFORMATION

> Read Full Case Study

COLLABORATE & ITERATE

DEFINE PURPOSE AND GOALS

Identify/quantify drivers — Identify & refine data

Build model — Test model

Deploy model — Tune/maintain

The key drivers of the model should have quantifiably strong predictive ability, measured on or derived from data. They should be grounded in an overall analytical framework of the company that defines the relevant metrics, defined taxonomy and approved data for usage.

What is the right number of drivers? There is no single, simple answer. Driver-based models trade completeness and manual input for speed and focus, so the goal is the have the smallest number necessary to explain/forecast the outcome and drive an action.

"I know my model won't be perfect, so let me be faster at incorporating actual results and spinning up a revised forecast." —CFO

> Read Full Case Study

Where to begin? Practitioners may begin 1) with known drivers then quantify them via data analysis to prove or measure their predictive ability, or 2) by starting with the data then using tools to identify the drivers, as is common in machine learning. Both routes require good data for success.

Common methods to identify and quantify drivers may include:

- History
- Judgment
- Industry benchmarks
- Driver tree decomposition
- Activity-based costing
- Sensitivity analysis
- Correlation
- Regression
- Machine learning

"Typically, you get the right five or 10 people in a room with a whiteboard and a handful of data sets and drivers and you can produce something very compelling."

—FINANCE STRATEGY CONSULTANT

"We look at seasonality, moving averages and determination of coefficients to determine the strength of relationships. These are standard in spreadsheets."

—HEAD OF FINANCE TRANSFORMATION

"We use machine learning to iteratively test which features best describe the data with the fewest variables. Specifically, we used principal component analysis and gradient boosting, but there are others as well."
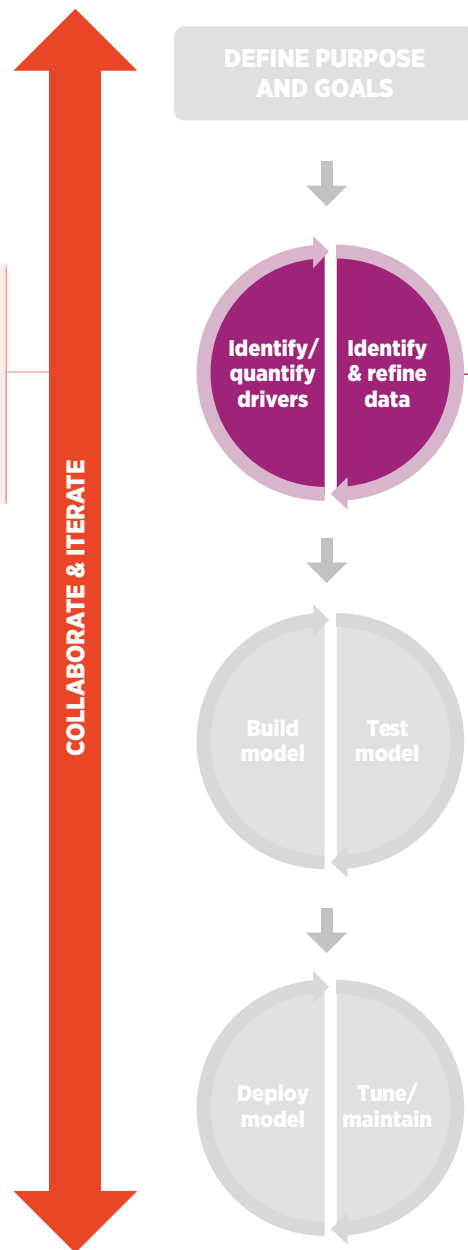
—DATA SCIENTIST

UNDERSTAND DRIVER ATTRIBUTES

Collaboration

Ensure business-wide input, understanding, and approval of drivers and model.

- Broad **consensus of driver definition** — data dictionary, collection source, transformations.
- **Prioritize** what is effective, what is negotiable.

COLLABORATE & ITERATE

DEFINE PURPOSE AND GOALS

Identify/quantify drivers — Identify & refine data

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- **Simplicity vs. complexity.** The more steps and calculations to create a driver, the more the opportunity for error or false readings.
- **Correlation is not causation.** While identifying correlations between drivers and performance is valuable, it's crucial to avoid drawing causal conclusions without further analysis.
- **Not all metrics are not drivers.** Driver-based modeling requires the drivers to impact processes and outputs; they are not descriptive measures.
- **Volatility.** Volatile drivers, data or correlations will create unreliable outputs; plan accordingly!
- **Understand controllability.** Some drivers are in your operational control (e.g., prices, sales, cost per unit) and should have specified owners and collection processes; external drivers (e.g., GDP, interest rates) are not controllable but still may drive models.
- **Objective and factual.**
  — Ensure the process is free from availability bias.
  — Avoid selecting drivers or data because they are easy to obtain rather than because they drive the business.
  — Avoid drivers or data with internal politics, i.e., many critics and/or a history of being unreliable.
  — Avoid drivers or data with pre-determined outcomes that serve to confirm existing conceptions or are subjective based on interpretation.

Examples of drivers

- **Revenue:** price, volume, number of sales reps, average order size, market size and penetration, churn rate, product mix
- **Expense:** cost per unit, customer acquisition cost, headcount, labor hours, overhead cost, throughput, machine downtime
- **External:** total market size, GDP growth, interest rates, demographics, commodity prices

GET THE PROCESS RIGHT

Collaboration

Ensure business-wide input, under-Standing, and approval of drivers and model.

- **Define the model goals:** what the model should accomplish, how it aligns with the business goals and market context, the specific output, and what decisions it will drive.
- **Define what is in/out of scope** and the level of detail/depth of the model (e.g., required accuracy and precision).

- **Discuss implications** of the outcome with key stakeholders.

- **Create a communication plan** to include deployment and appropriate usage.
- Establish a **change management process** to test and update the drivers or model.

COLLABORATE & ITERATE

DEFINE PURPOSE AND GOALS

Identify/ quantify drivers / **Identify & refine data**

Build model / **Test model**

Deploy model / **Tune/ maintain**

- **Align with objectives and management reporting.** The drivers and the model output integrate with management reporting structures to ensure it aligns with decision-making processes.

- **Driver and model ownership.** Identify owners of the data, the drivers and the models.
- **Include human judgment.** Not all mathematical constructs make business sense! It's a tool to inform decision-making, not a substitute for experience and expertise.
- ***Good data quality is essential to meaningful downstream outputs.** Implement robust data validation processes to ensure the reliability of information.
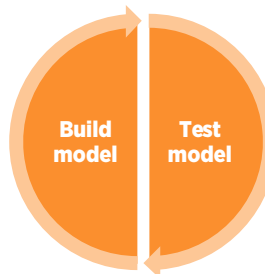
- **Test the models** with sensitivity, scenarios, stress and historical data sets; compare against industry benchmarks.
- ***Avoid over-fitting the models**, which can lead to models that are highly accurate on test data but not relevant in a production setting.
- ***Machine learning-derived drivers require significant time** to prepare data and train the model.
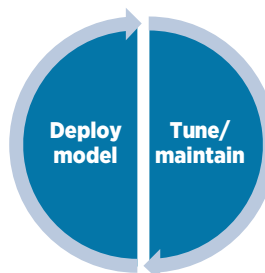
- ***Fine tune and the models**. AI/ML models continuously iterate on the dataset and can improve their correlations or even change the drivers. This needs to become standard operating procedure for these models.
- **Revalidate the model** as operations and market dynamics change.
- **Apply the model as designed.** Relationships are established and calibrated for specific data sets, outputs and decisions; using the model for other purposes risks a bad output.
- **Document** the key elements of the drivers and models and explain how to use the model.

* Especially applicable to artificial intelligence and machine learning approaches to driver-based models.

About the Author

Bryan Lapidus, FPAC, director of FP&A Practice for the Association for Finance Professionals (AFP), has more than 20 years of experience in the corporate FP&A and treasury space working at organizations such as American Express, Fannie Mae and private equity-owned companies. He is the staff subject-matter expert on FP&A for AFP, which includes designing content to meet the needs of the profession and helping keep members current on developing topics. Lapidus also manages the FP&A Advisory Councils in North American, Asia Pacific and the Middle East and Africa, which act as a voice to align AFP with the needs of the profession.

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