STRATEGIC MANAGEMENT SERIES

Predicting the Future: Anything can be Modeled

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August 9, 2021

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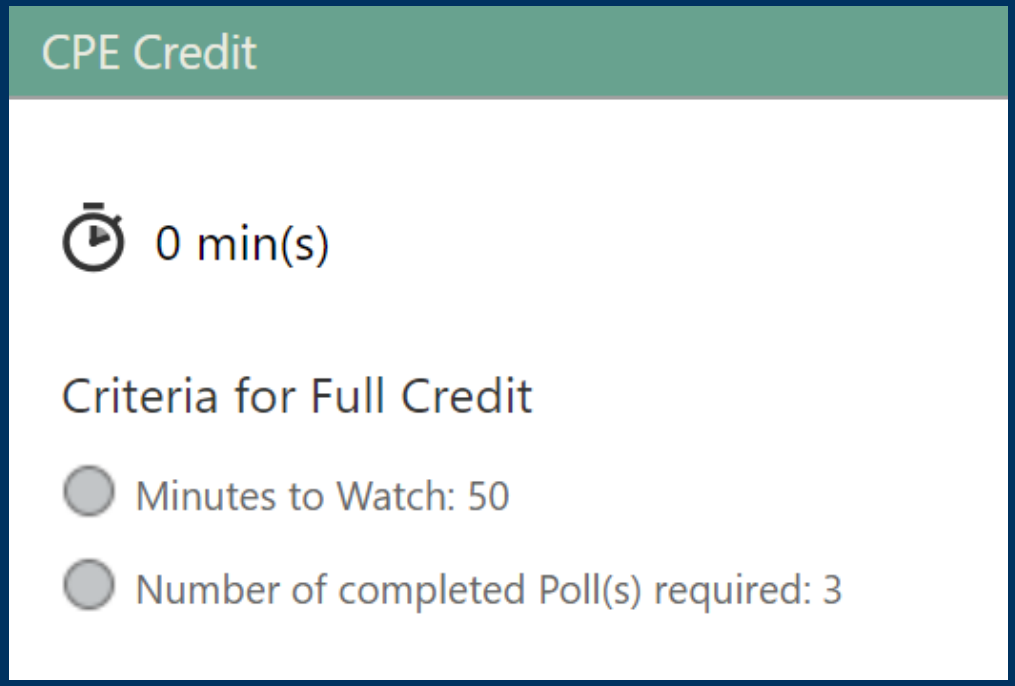

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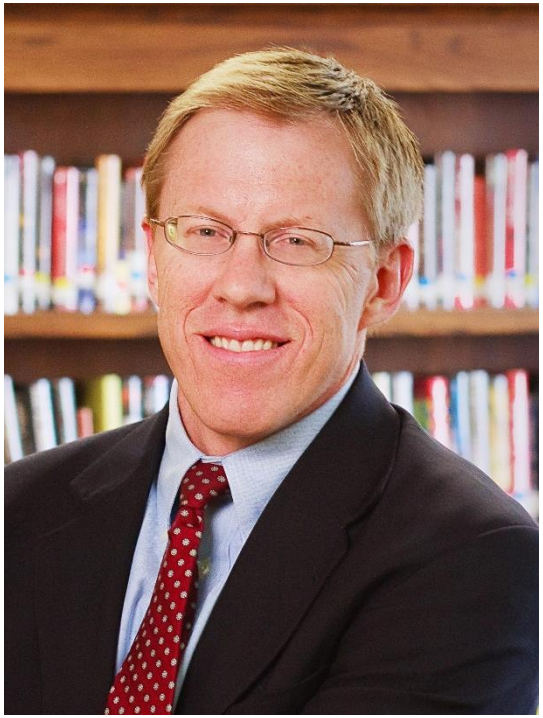
Featured Presenter



Kip Krumwiede, Ph.D., CMA, CSCA, CPA, AIE

Director of Research

IMA

Kip Krumwiede's Biography

- Kip is the Director of Research for IMA. In this role, he is responsible for developing and producing research studies on a variety of accounting and business topics, overseeing production of the IMA Educational Case Journal (IECJ), managing the academic grant program for IMA's Research Foundation, and supporting various other IMA programs.
- Prior to joining IMA, he spent 18 years as a management accounting professor and worked for two Fortune 500 companies in a variety of management accounting related positions.

Featured Presenter

Jennifer Wolfenbarger, CMA

Vice President and CFO, Insulation

Owens Corning

Jennifer Wolfenbarger's Biography

- Jennifer is Vice President and CFO of Owens Corning Insulation Division. Before joining Owens Corning earlier this year, Jennifer was Vice President-CFO for Stryker Corporation's Global Quality & Business Operations. Prior to that she served in various finance leadership positions with General Motors and Caterpillar.
- Jennifer has bachelor's degree in Accounting and an MBA in Finance & Organizational Behavior, both from Butler University.
- Jennifer has been a strong supporter of IMA and the management accounting profession in general.

Featured Presenter

Lawrence Serven, MBA

Regional Director

Board International

Lawrence Serven's Biography

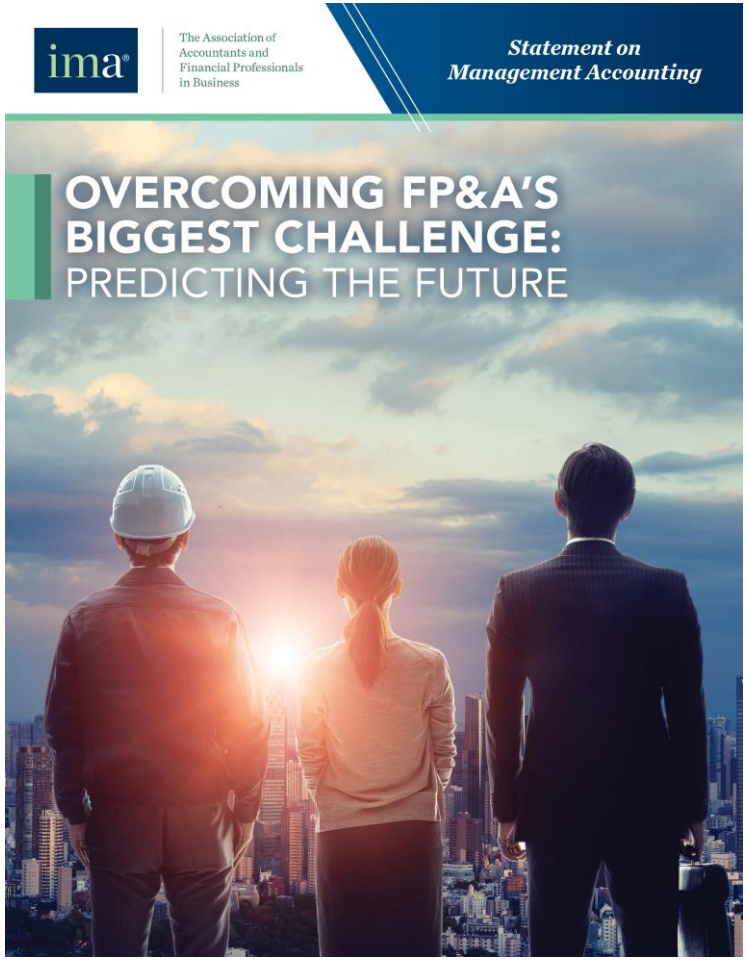
- Lawrence Serven is an internationally recognized authority on enterprise performance management (EPM). He is the founder and former CEO of XLerant, Inc., a leading EPM software company. He is also the author of Value Planning: The New Approach to Building Value Every Day (J. Wiley & Sons) that earned the endorsement of the CEO of Pfizer, the CFO of Walmart and other industry leaders. Lawrence's work has been profiled in the New York Times and The Harvard Business Review. He has also contributed articles to The Harvard Management Update, The Journal of Corporate Accounting & Finance, CFO Magazine, Strategic Finance, BPM Magazine and other industry leading publications.

Learning Objectives

Upon completing this webinar, you will be able to:

1. Recognize that the goal of forecasting is to reduce uncertainty about the future.
2. Explain how anything can be measured and modeled.
3. Describe how to perform basic predictive analytics techniques.
4. Give examples of ways to improve forecasting assumptions and estimates.

Statement of Management Accounting



Overcoming FP&A's Biggest Challenge: Predicting the Future


How do you perform predictive analytics when past data are no longer valid for predicting the future?


Goal is to reduce uncertainty.

The goal of forecasting is to reduce uncertainty

Example 2: Commute times

- How long are employees' commute times?
  - Random times: 22, 58, 36, 78, and 62
  - What's the chance the median commute time of the entire workforce (10,000) is between 22 and 78?
    - Answer: 93.75%
      - Likelihood of flipping 5 coins all heads or tails is 1/32 or 3.125%
      - Chance of not getting all heads or tails is 100% - (3.125 x 2) = 93.75%

The goal to reduce uncertainty

- It is often possible to make useful inferences based on a small amount of observations.
- Anything that can be observed, can be measured.
- And anything that can be measured, can be modeled and used to forecast the future.
- Any information that can be potentially useful to reduce uncertainty can add value to predictive models.

Polling Question 1

What are the biggest financial planning and analysis (FP&A) challenges your company is facing now?

(Please select all that apply)

a) Insufficient data
b) Too busy doing financial reporting to do planning and analysis
c) Doesn't connect with company strategy
d) The future is harder to predict right now
e) Still doing most of it in Excel
f) Lack of skills

Polling Question 1 Results (Placeholder)

Anything can be measured and modeled

1. *Concept of measurement*: the definition of measurement is misunderstood.
   - Think of measurement as a "quantitatively expressed reduction in uncertainty based on observation"
2. *Object of measurement*: The thing being measured is not well defined.
   - Think more specifically what more or less of it would look like.
3. *Method of measurement*: Many procedures of empirical observation are misunderstood.
   - Does not necessarily require "data"
   - Measurement can be based on observations (e.g., commute times)

Anything can be measured and modeled

Example: IT Security at U.S. Dept. Of Veterans Affairs

- Hubbard asked three questions:
  1. What decision is this measurement for?
  2. What do you mean by IT security?
  3. What does improved IT security look like?
     - In other words, what would we see or detect that would be different if IT security was stronger or weaker?

Polling Question 2

How well does your company's current forecasting model reduce uncertainty about the future?

a) Very well
b) Fairly
c) Not so well
d) Very poorly
e) Not sure

Polling Question 2 Results (Placeholder)

Basic Predictive Analytics Techniques

Nine Ways to Improve Forecasting the Future

- Expand the data available
- Address the knowing-doing gap
- Improve assumptions and estimates
- Tools: Start small and add on
- Model building: Think causality
- Monitor results and quickly identify the business reasons behind variances
- Use scenario planning
- Establish data collection systems
- Improve analytical skills

1. Expand the Data Available

The potential types of data needed for predictive analytics may seem foreign to many management accountants.

But today there are vastly more ways data are collected with essentially unlimited storage space.

Expanding Sources of Nonfinancial Data

TABLE 2: BUSINESS SOURCES OF NONFINANCIAL BIG DATA INFORMATION

Business Process	NFI—Sources of Big Data Within Organizations
Property, plant, and equipment	Online databases complementing historic value
Marketing	Social media, email, Google search, website analytics, and even health data from wristband devices and smartphones
Accounts receivable	Full textual description (unstructured data) of goods or services
Purchases and sales	Radio frequency identification (RFID), GPS, and Bluetooth beacon
Cash	Mobile payment, electronic credit, and Apple Pay or Android via near-field communications
Customer service	Email, social media, and call center records
Supply chain	RFID, GPS, security video (logistics center), sensors, and greenhouse gas (GHG) data
Inventory	RFID, GPS, and security video (stocking warehouse)

Source: Association of Chartered Certified Accountants and Chartered Accountants Australia and New Zealand, *Analytics in Finance and Accountancy*, September 2020, **bit.ly/3tYcwCN**.

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2. Tools: Start small and add on

Building a Predictive Model

1. Start small to include the most significant variables and approximate relationships among the variables.

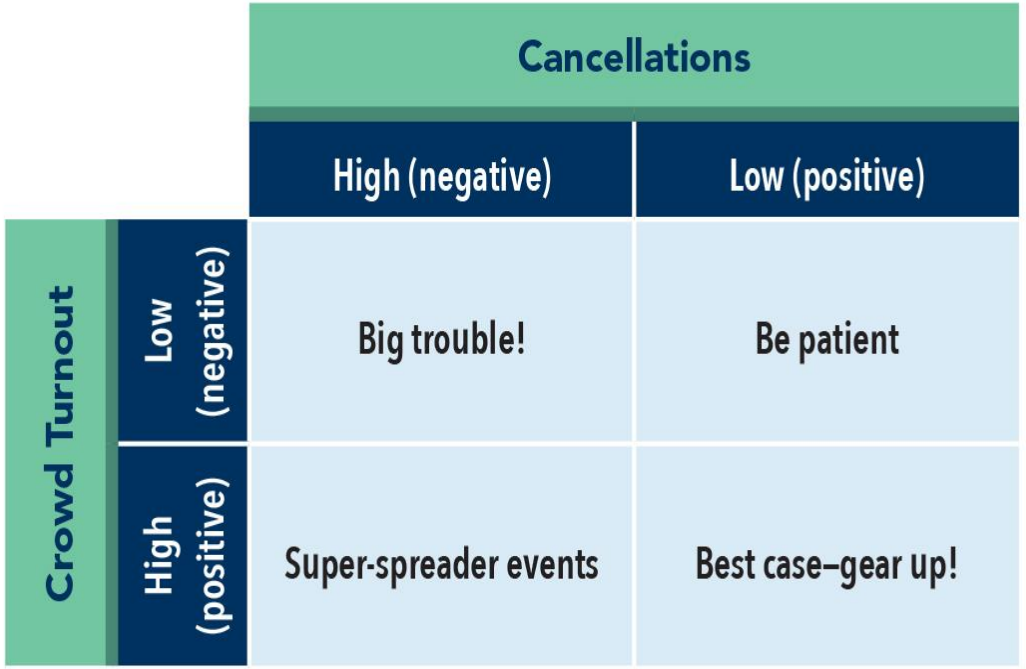
2. Once base model is solidified, start adding variables to increase its accuracy

3. When the model gets sufficiently complex to make key assumptions cumbersome, many FP&A software solutions are available.

3. Use scenario planning

Scenario Planning: Fireworks Operator

Identify potential scenarios around 1-2 key focal issues, driving forces, or critical uncertainties



“Scenario Management”

"I've become less and **less of a fan of the term ‘scenario planning'** *in the last nine months, because I've discovered, in our case, it tends to be an exercise in sounding intelligent about the future.”*

"I think of it more as **scenario management** *than scenario planning. In that regard, we have very much sharpened our approach to having Plan B, Plan C, and plan D* **available and implementable** *fairly quickly.“*

John Murphy, CFO
Coca-Cola Company

Coca-Cola

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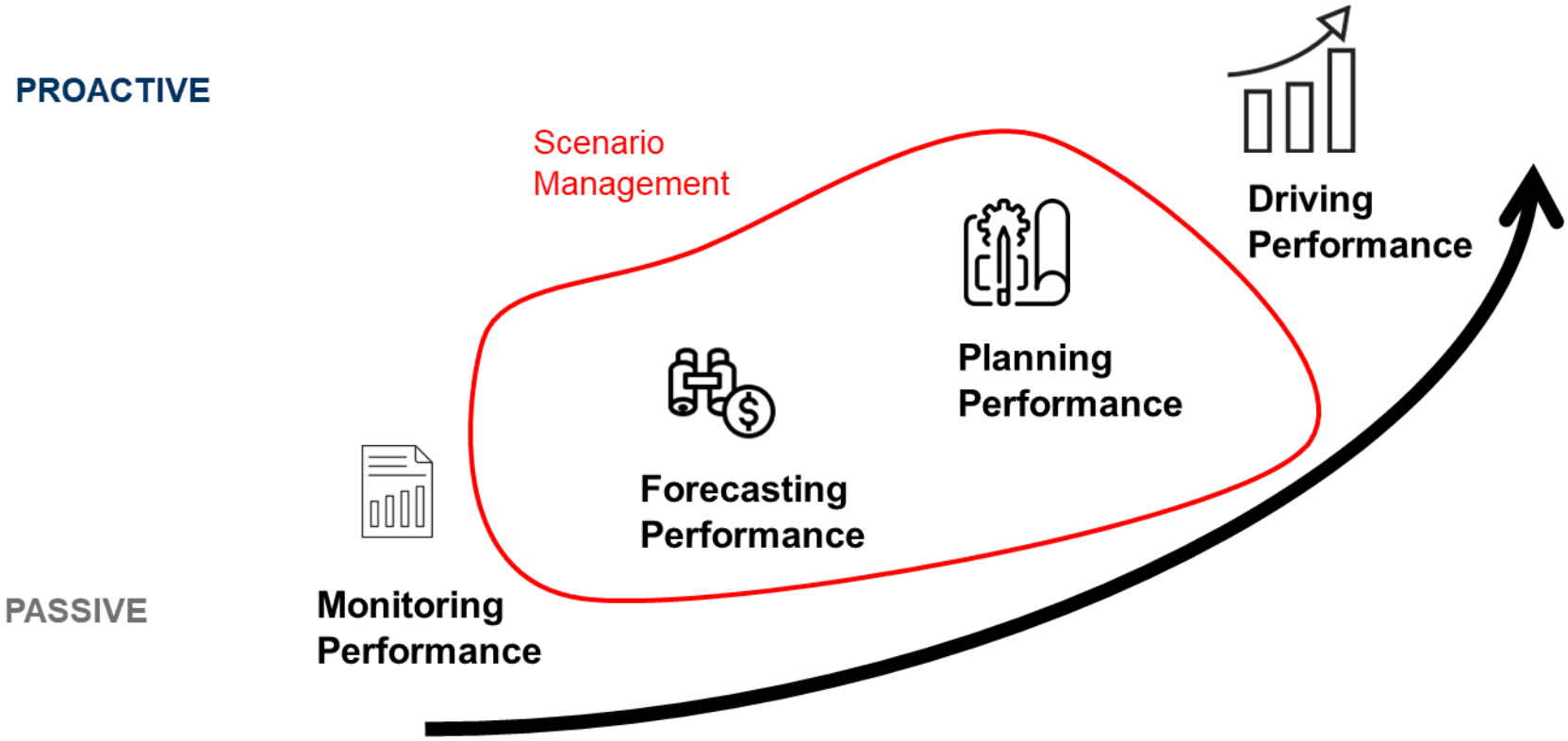
Sparking your business imagination

A New FP&A Maturity Model



4. Quickly identify business reasons behind variances

There should be a strong connection between predictive analytics, competitive strategy, and operational execution.

A common reason why the future does not turn out as predicted is a failure to execute plans.

Polling Question 3

To what extent have your organization's key performance indicators (KPIs) changed compared to one year ago?

a) Not at all
b) Limited extent
c) Moderate
d) Significant extent
e) Very large extent
f) Not sure

Polling Question 3 Results (Placeholder)

5. Model building: Think Causality

Demand Forecast Model For TESLA

- # Non-Tesla Fast Charge Stations
- Gas Prices

→ Total EV Market Demand

- No. of Tesla Fast charge Stations
- Level of Competition

→ Tesla EV Market Share

- Total EV Market Demand

  x Tesla Market Share

→ Tesla Forecasted Demand

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Simple Ways to Improve Forecasting Assumptions and Estimates

Simple ways to improve forecasting estimates.

- Calibration
- "Rule of Five"
- Ranges & Simulations
- Regression

Polling Question 4

How many significant data breaches (including cyber-attacks, unauthorized system or physical access) would you estimate there were in the United States in 2020?

a) 157
b) 447
c) 1,001
d) 1,632
e) 2,540

Polling Question 4 Results (Placeholder)

Using “Rule of Five” to Estimate Median of a Population

Interest-level data (0-100): 78, 44, 42, 58, 56, 44, 71, 63, 58, 57, 60, 48.

Sample Size	*n*th Largest and Smallest Sample Value		
	*n*th	Low	High
5	1st	42	78
8	2nd	44	71
11	3rd	44	63

Ranges, Simulations, and Regression

Ranges: Use Confidence Intervals (upper & lower bounds):

- Compute the mean and standard deviation (S.D.)
- 95% Confidence Interval (CI): Mean +/- (1.96 S.D.)

Simulations (with ranges):

- Use Random number generator to run simulations in Excel
- Define lower and upper bounds, distribution (e.g., normal, binary), mode or probability

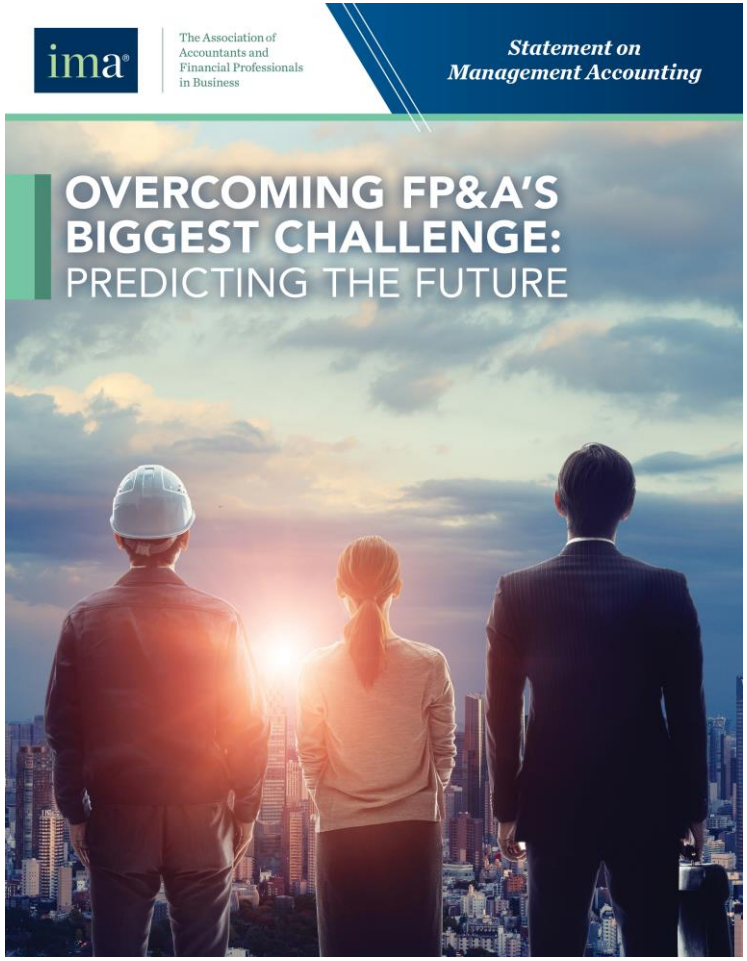
Regression using Excel:

- Data Analysis Toolpak
- R square, Intercept, X_1 coefficient, X_1 p-value, X_1 CI, X_2 coefficient, X_2 p-value, X_2 CI, etc.

Conclusions and Recommendations

- There are many simple ways to reduce uncertainty about the future.
- If it can be observed, it can be measured and modeled!
- First decide to strengthen commitment to FP&A.
- Consider including external forward-looking variables.
- Quickly identify business reasons for variances.

Check out the SMA

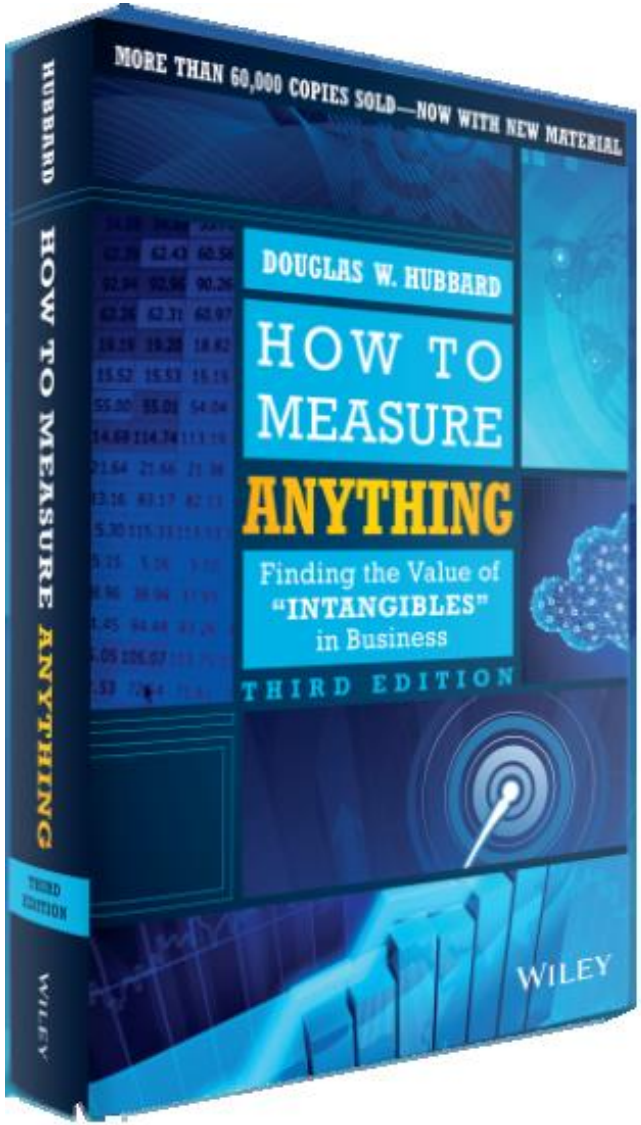


"Overcoming FP&A's Biggest Challenge: Predicting the Future"

Coming Soon:

"Predicting the Future: Forecasting Demand"

“How to Measure Anything” Book



By Douglas W. Hubbard

Questions & Answers

Use the* Q & A Panel *to send your questions to our panelists.

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Thank You to Our Presenters!

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Final Reminders

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  - On your screen
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Thank You!




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For nearly 50 years, the CMA certification has been the global benchmark for accounting and finance professionals. It demonstrates mastery in 12 critical practice areas in business, including technology, analytics, financial planning and analysis, performance, and control. Professionals who earn the CMA can gain greater credibility, career advancement opportunities, and higher earning potential.

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