AFP 2020 | VIRTUAL EXPERIENCE 10/19-10/29

Is Your Forecast Adding Value?

Maximize forecast accuracy Measures, Metrics and KPIs to Save Time and focus on what Really Matters...

Roger Cluff

Scott Corvey

Agenda

- **Setting the Stage**

- **Forecasting – A Retrospective**

- **The Forecasting Goal**

- **Lean Forecasting**

- **Forecast Value Added**

- **Q&A with Scott Corvey**

SETTING THE STAGE

Roger Cluff

Speaker Bio

------- **12 Years FP&A Manager, Finance Director**

------- **8 Years Financial Analysis & Costing Management**

------- **MBA in Finance & Information Systems**

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About A-dec

During 2003-2019, dentists voted A-dec equipment as their favorite Operatory Equipment manufacturer

- Chairs
- Delivery Systems
- Lights
- Stools
- Cabinetry

Speaker Bio

Scott W. Corvey, FP&A

Director of Financial Planning & Analysis for FYIsoft, Inc.

He has led Finance and Planning teams for over fifteen years and started his career as an accountant. He has a Bachelor of Science in Business Administration (with emphasis in accounting) from Columbia College, in addition to a Master of Science in Finance, and a Master of Business Administration (MBA) from Webster University in Saint Louis. Throughout his career, Scott has worked in regulated utilities, investment management, retail franchising, and information technology.

He is an expert in planning best practices, cost allocation, reporting, forecasting, technical writing, modeling, USGAAP, and quantitative financial concepts. He holds a Certified Financial Planning & Analysis Professional credential from AFP (Association of Finance Professionals). Scott is passionate about teaching and developing others and has developed content and taught in Analyst Development programs at the Vanguard Group, Affiliated Distributors, Cardinal Health, in addition to MYCPE.com.
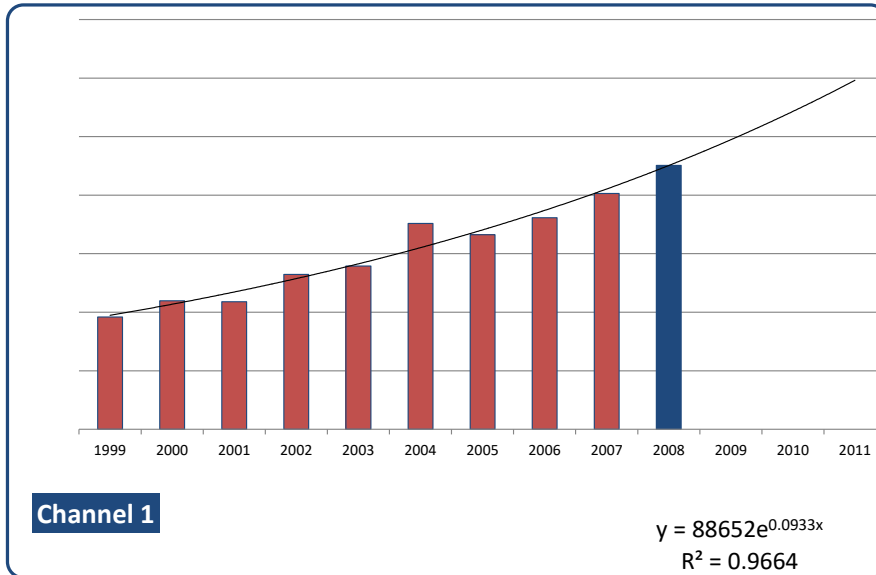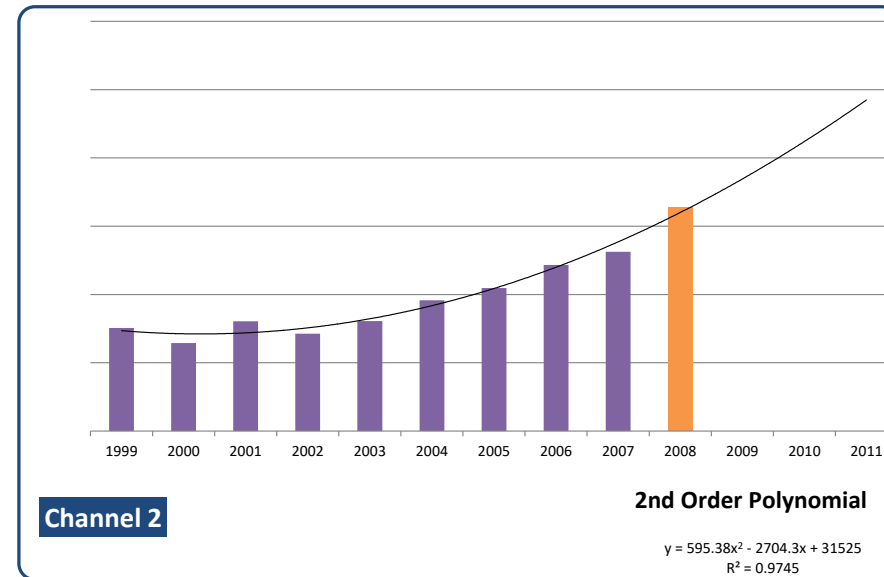
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FORECASTING - A BRIEF RETROSPECTIVE
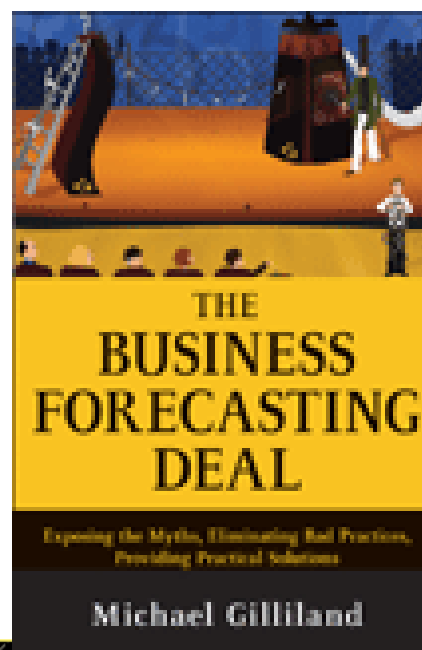
My First Forecast at A-dec...
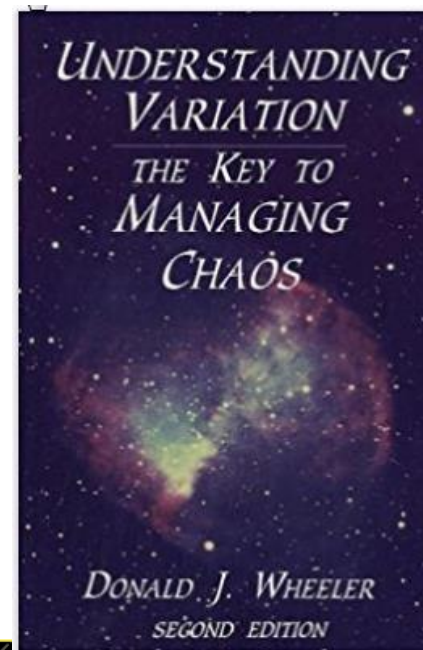
Beautiful!

What Could Go Wrong? In 2008...

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My Goal for this Presentation

I want to share with you a few concepts that I wish that I had learned early in my career... but didn't, including-

- <u>What items to Forecast</u>
- How to know if you are <u>Adding Value</u> to your Forecasts
- How to know whether a <u>Forecast Variance</u> is worthy of Analyzing.

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FITTING THE CURVE + MAPE

FITTING THE CURVE

DEFINITION
"Fitting a model" is creating a relationship between predictors (independent variables) and outcomes (dependent variables)

USE
Different models or algorithms may be compared to historical data to see which has the best description (smallest variance) from the data

MAPE

DEFINTION
MAPE, or mean average percentage error, is a method to calculate the average variance

USE
When comparing the accuracy of various forecasting methods, the one with the lowest MAPE may have the best predictive power

USE CASE
In this video discover the importance of fitting a curve, and how the MAPE can help you figure out which is the best fit curve.

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THE FORECASTING GOAL

Forecasting – Are we Adding Value?

- How do we know if we are doing a "Good Job" of Forecasting?
- How do we know if all of the effort and time that we put into our forecasts is improving the result?
- Do we even know what a reasonable expectation is for the level of accuracy for each item that we forecast?
- Do management reviews/adjustments help the forecast? …or make it Worse?
- What if we could spend less time forecasting and get a better result?

The Forecasting Goal

Goal:

- Maximize Forecast Accuracy while...

- Minimizing the Resources and Time utilized.

The classic Cost-Benefit Tradeoff...?

Forecasting - What can we Control?

"We can't always control the forecast accuracy that we achieve, and we can't always achieve the level of accuracy we desire. However, we can control the forecasting process that we use, and we can control the resources we invest in that process."

- Michael Gilliland, SAS Forecasting
The Lean Approach to Business Forecasting

Forecasting as a Process

All Work is a Process

If we aren't getting the results we want, we need to examine the process.

- Is the Process <u>Capable</u> of Delivering the Desired Results?
- Are the Desired Results achievable with any Process?

LEAN FORECASTING

# Variation is the Enemy!

Lean Forecasting Process

1. Identify Which Items to Forecast
   - Those that "Matter" (Importance)
   - Those that are "Forecastable" (Volatility)
2. For the Selected Items - Identify those steps in the forecasting <u>Process</u> that Add Value and Eliminate those that do Not!

Eliminating Process Steps that Don't Add Value means Better Forecasts for Less Effort !

What's "Forecastable"?

- Items that have <u>Low Volatility</u> or can be tied to a Known & Forecastable Driver or Leading Indicator

- You can Measure "forecastability" with a statistical measure called the Coefficient of Variation (CoV)

- Coefficient of Variation $= Std. Deviation/Average$

  - Can multiply by 100 to calculate it as a % as well…

- Returns a number that provides a <u>Relative</u> measure of Volatility

  - Important to be able to Compare across Forecasted Items

Forecast Segmentation
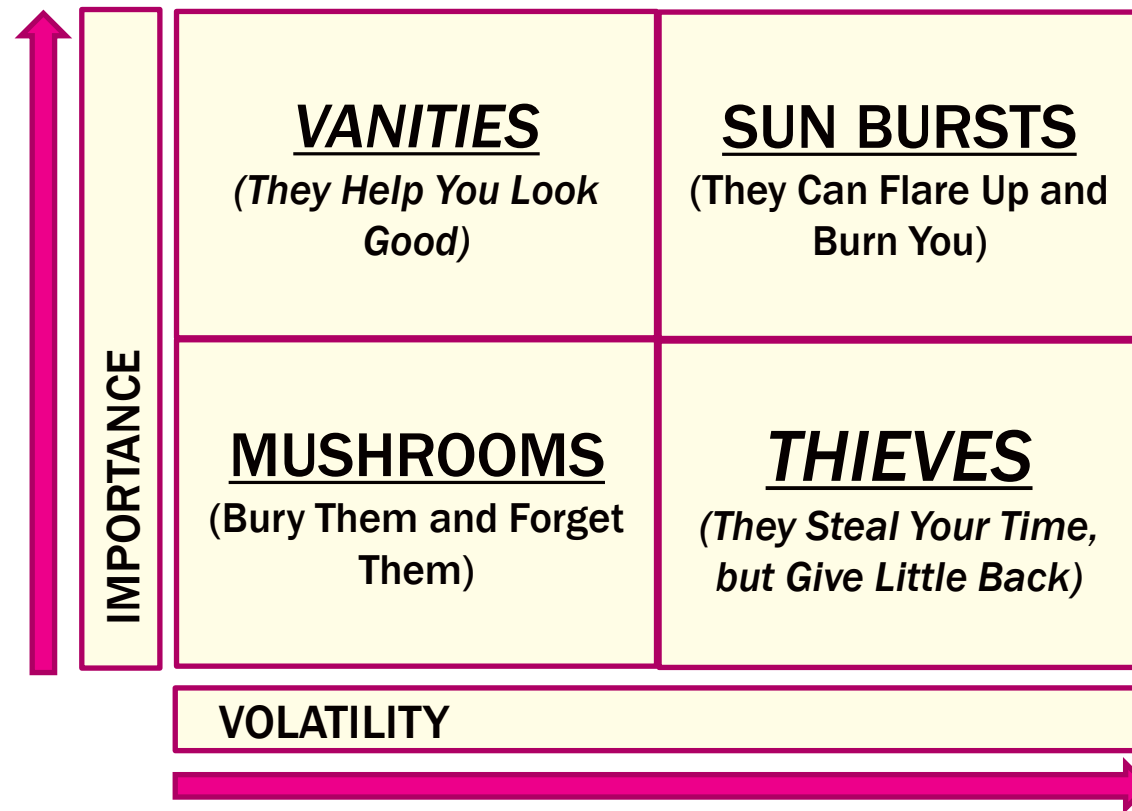
Develop a Strategy, Process, and Metrics for Each Segment!

Calculating the Coefficient of Variation

Item	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Std. Dev.	Avg.	CoV
Item 1	196	181	317	79	54	230	44	260	101	170	0.6
Item 2	115	26	12	15	35	11	6	48	36	34	1.1
Item 3	39	54	42	30	37	50	36	46	8	42	0.2

CoV = STDEV.S() / Average()

Items > 1.0 Coefficient of Variation are generally considered to have High Variation

CoV Analysis Example
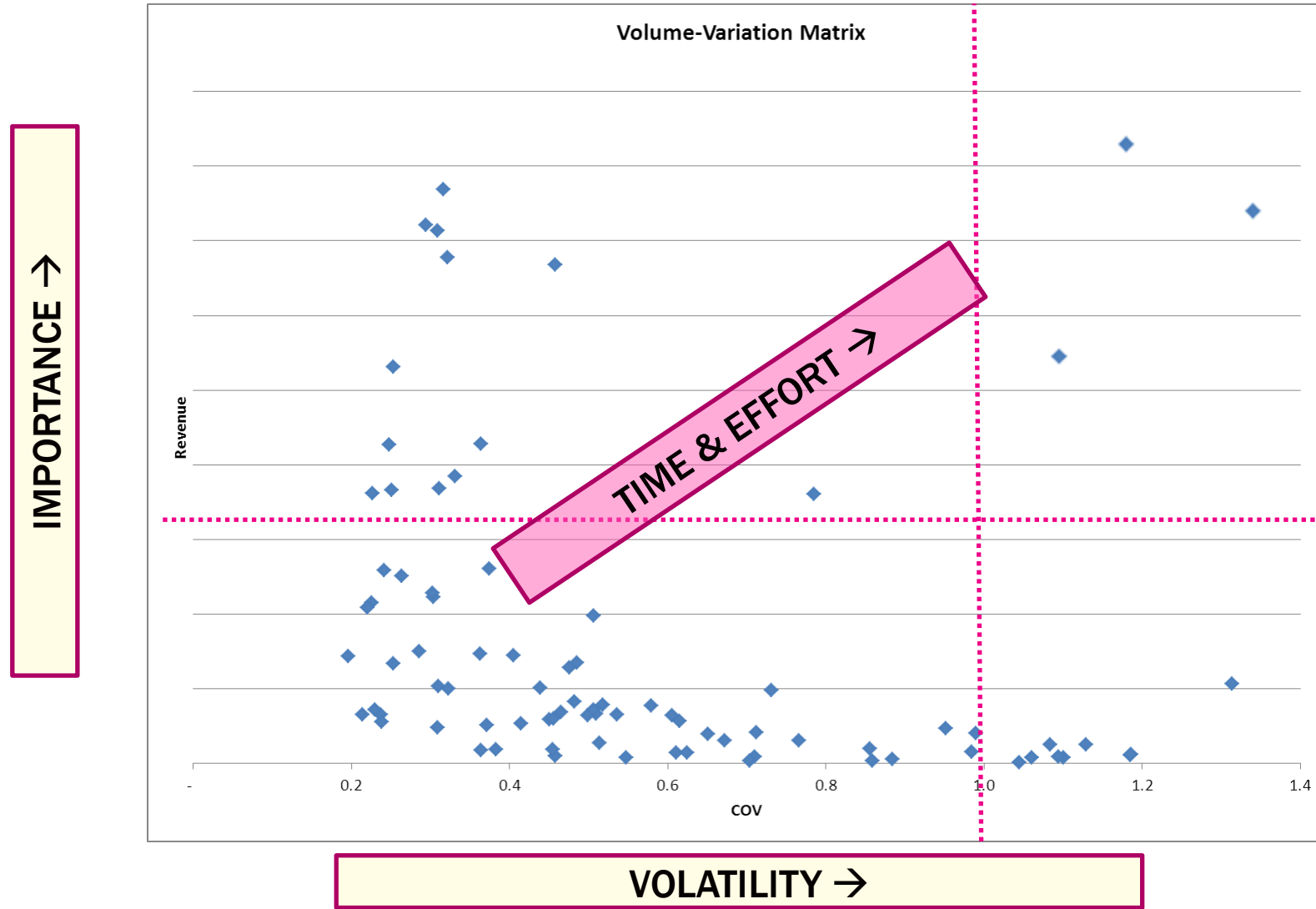
Forecastability Takeaways

- **Spend your Time Wisely – on those line items that make the most difference**
- **Segment items into like categories and build forecasting strategies around each category**
  - Use alternate strategies to enhance flexibility to manage those items with high volatility
- **Some line items may simply not be "forecastable" to the level that is desired**
  - Set Expectations in Advance and Acknowledge forecasting limitations

FORECAST VALUE ADDED

Forecast Value Added (FVA)

VP/CFO/President/CEO

Director/Controller

Functional Manager

Immediate Supervisor

Analyst

Generate Initial Forecast

Review/Adjust Forecast

Review/Adjust Forecast

Review/Adjust Forecast

Present Final Forecast
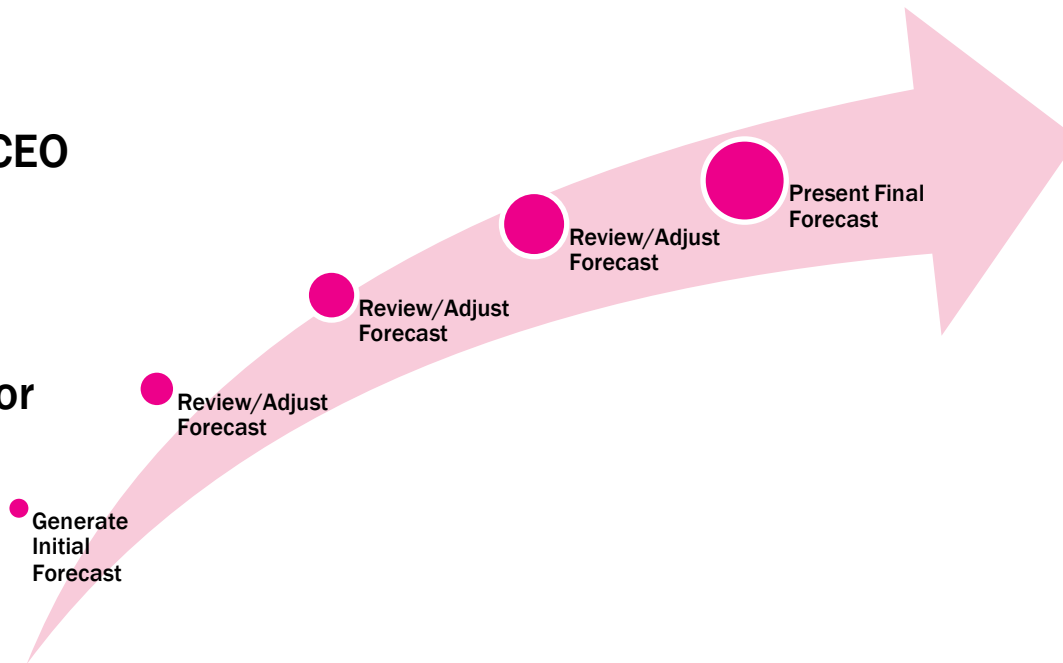
Forecast Value Added consists of <u>Measuring the Results of Each Step</u> of the forecast process to see which steps Add Value… and which do not.

FVA – The Process

1. **Generate a "Control" Forecast – as simply as Possible**
   - Statisticians call this a "Naïve" forecast
2. **Follow the normal process to Generate, Analyze, Review, and Approve the Forecast**
3. **Each time a change is made to the forecast after the Initial Forecast is generated, that change <u>Must</u> be captured**
   - That can generate a <u>Lot </u>of Data…
4. **Using a measurement method, measure the variance from the "Control" forecast for the initial forecast and for each subsequent forecast change.**
5. **Eliminate the Process Steps that Don't Add Value**
   - Warning: Telling the Manager/VP/CFO/CEO that they are NOT adding value to the forecasting process can be painful…

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The Naïve Forecast

- **The Naïve Forecast is the "Do Nothing" forecast**
  - The <u>Simplest</u> Forecast Available
- **There are many potential ways to develop the Naïve Forecast-**
  - Last Months Actual Value = Next Months Forecast
  - Last Years Same Month Actual Value = Next Months Forecast
  - Select the Historical Values & "Drag to the Right"
- **The important elements of the Naïve forecast are that**
  - It's <u>Simple</u> – what you could get if you essentially spent Zero time forecasting
  - It's Measurable & Trackable
  - It's Used Consistently as the Comparison

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Measurement Methods

- **There are numerous ways of measuring the forecast error-**
  - Simple Error
  - Absolute Error
  - Mean Absolute Deviation (MAD)
  - Mean Percent Error (MPE)
  - Mean Absolute Percent Error (MAPE)
    - **= Average of the Absolute Error Percentages**
- **The important elements of the Forecast Error measurement are that-**
  - Everyone understands how it is calculated
  - It is used consistently as the measurement

Who's the Best Forecaster?

Financial Analyst	Forecast MAPE	Portfolio CoV	Naïve MAPE	FVA
A	10%	0.2	5%	-5%
B	15%	0.5	15%	0%
C	20%	1.5	30%	+10%

► Analyst "A" has the lowest forecast MAPE – so they are the best forecaster – right?

► Analyst "C" has the most difficult product to forecast, as measure by the Coefficient of Variation and is "Adding Value" to the forecast vs. the Naïve Forecast, so Kudo's (and maybe a bonus) to Analyst "C"!
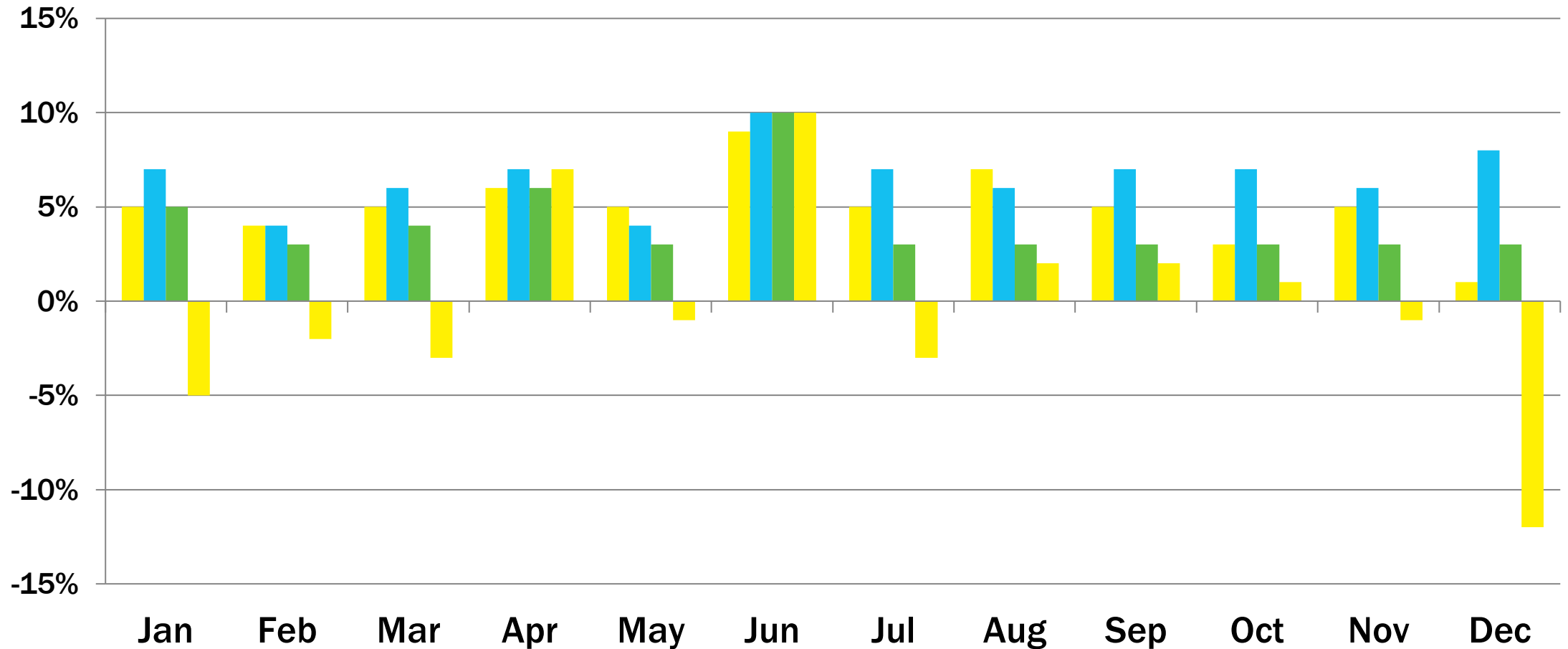
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FVA Forecast Comparison

At Each Step in the Process – compare the Value Added to the Previous Steps...

Step	MAPE	Fcst Vs. Naïve	Fcst Vs. Statistical	Fcst vs. Override	Fcst vs. Consensus
Naïve Forecast	50%	-	-	-	-
Statistical Forecast	45%	+5%	-	-	-
Analyst Override	40%	+10%	+5%	-	-
Consensus Forecast	35%	+15%	+10%	+5%	-
Mgmt. Approved Forecast	40%	+10%	+5%	0%	-5%

Something went wrong at the Management Level...

FVA Takeaways

- Forecasting is a process - like all work

- Improving the process can improve your Forecast

- Eliminating process steps that don't add value can both improve your forecast and save you time

- Using a Naïve Forecast gives an Important benchmark to help you set reasonable targets for Forecast Accuracy and Assess Performance

- If you haven't measured whether your forecast is better than the Naïve forecast – there is a strong possibility that it isn't...

FORECAST VARIATION

Traditional Variance Analysis
Income Statement

	2020	2019	Var	% Var		BDGT	Var	% Var
Total Net Sales	**500.8**	**478.6**	**22.2**	**4.6%**		**497.2**	**3.5**	**0.7%**
Total Cost of Goods Sold	255.8	244.1	11.7	4.8%		245.2	10.6	4.3%
% of Sales	51.1%					49.3%	1.8%	
Standard Cost of Goods Sold	200.4	195.3		2.6%		195.3	5.2	2.6%
% of Sales	40.0%	40.8%	-0.8%			39.3%	0.8%	
Other Cost of Goods Sold		48.	6.5	13.2%		50.0	5.4	10.9%
% of Sales	11.					10.0%	1.0%	
Gross Margin	245.0	234.5	10.5	4.5%		252.0	-7.1	(2.8%)
% of Sales	48.9%	49.0%	-0.1%			50.7%	1.8%	
Variable Selling Expenses		16					-0.8	(4.9%)
% of Sales	3.0%	3.5%	-0.4%			3.2%	0.2%	
Net Margin	229.8	217.9	12.0	5.5%		236.1	-6.3	(2.7%)
% of Sales	45.9%	45.5%	0.4%			47.5%	1.6%	
Total G & A	75.9	81.4	-5.4	(6.7%)		75.3	0.7	0.9%
% of Sales	15.2%	17.0%	-1.8%			15.1%	0.0%	
Operating Income	**153.9**	**136.5**	**17.4**	**12.7%**		**161**	**-7**	**(4.3%)**
	30.7%	28.5%	2.2%			32.4%	-1.6%	

Sample Variance Analysis Table

Looking at traditional Variance analysis tables often drives a lot of work that may or may not add any value...

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Analyzing Variation with Control Charts
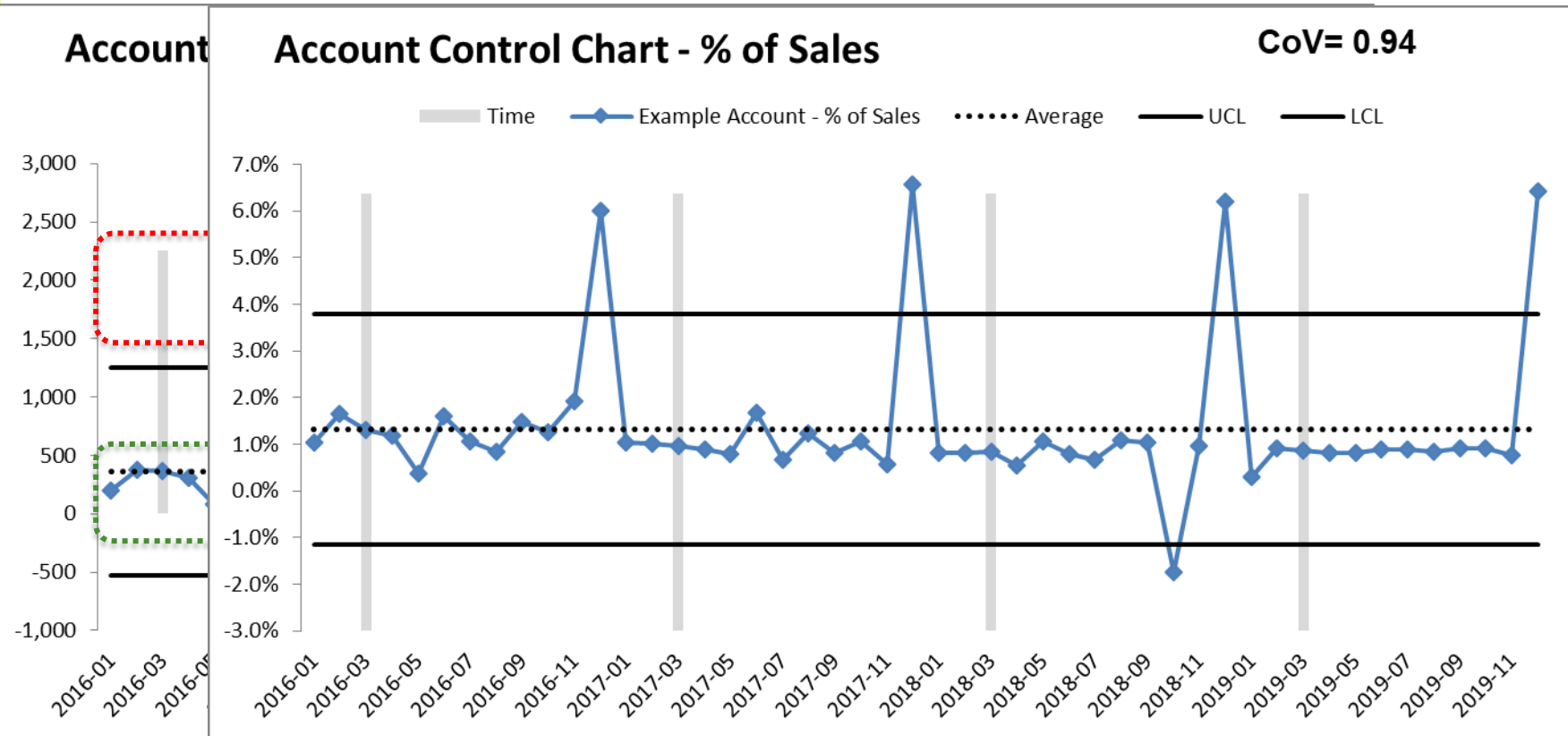
Analysis-

- ► There are typically large spikes in this account in December
- ► In actual Dollars, the spikes are growing, but as a % of Sales they are fairly constant
- ► October of 2018 appears to be a True Outlier that needs to be investigated...
- ► Otherwise we shouldn't spend a lot of time on this account...

► Looking at a Control Chart is much easier to see what months are actually "Variations" and focus on those...

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Conclusion

The Forecasting Goal:

– Maximize Forecast Accuracy while...

– Minimizing the Resources and Time utilized.

Using the Coefficient of Variation (CoV), Forecast Value Added (FVA), and Statistical Control Charts you can-

– Know what to spend your Forecasting and Analysis time on

– Know whether your Forecasting Process steps are Adding Value to the Forecast or Not

More Resources

Lean Forecasting & FVA White Papers

- **The Lean Approach to Business Forecasting (www.sas.com)**

- **Forecast Value Added Analysis: Step-by-Step (www.sas.com)**

Statistical Process Control Charts

- **Control Charts (www.asq.org/quality-resources/control-chart)**