

Mktg 898 or 398: Forecasting Methods for Marketing

Spring 2006 - Tues-Thurs 10:30-12

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Instructor

J. Scott Armstrong (Ph.D., MIT, 1968) is a founder of the *Journal of Forecasting*, the *International Journal of Forecasting*, and the International Symposium on Forecasting. He is the author of *Long-Range Forecasting*, creator of the Forecasting Principles website (forecastingprinciples.com), and editor of *Principles of Forecasting: A Handbook for Researchers and Practitioners*, 2001. In 1996, he was selected as one of the first six “Honorary Fellows” by the International Institute of Forecasters. Along with Philip Kotler and Gerald Zaltman, he was named the SAM/JAI Press Distinguished Marketing Scholar of 2000. His recent interests have been in how to forecast elections and the outcomes of conflicts, such as terrorism.

Course Objectives

To improve skills in:

1. using various techniques for forecasting
2. assessing uncertainty
3. evaluating forecasting methods
4. gaining acceptance of forecasts
5. implementing new methods into organizations.

Text

Principles of Forecasting: A Handbook for Researchers and Practitioners, J. Scott Armstrong (editor), Boston: Kluwer Academic Publishers, 2001.

Web site

<http://forecastingprinciples.com> contains data sources, data, freeware, the Forecasting Audit, information on special interest groups such as crime forecasting or political forecasting.

Supplemental Readings

Fair, Ray C., (2002), *Predicting Presidential Elections and Other Things*. Stanford: Stanford University Press.

Long-Range Forecasting, J Scott Armstrong (1985) in full text at <http://forecastingprinciples.com>

Numerous full-text papers are available at <http://forecastingprinciples.com>

Project or a series of mini-projects

The purpose of the project is to gain experience in using and evaluating forecasting methods. Select one or more problems and apply various techniques. The key is to show mastery of some forecasting techniques. One possibility for a project would be to conduct a forecasting audit of an organization and then use it to recommend improvements.

Grading

You can

- 1) keep a portfolio and ask me to grade that or
- 2) keep a time diary with time spent and an explanation of what was done and what was learned (grade based on learning hours)
- 3) a combination of #1 and #2.

Schedule

To do your project, you will need to jump around in the schedule. For example, you will need to address the implementation and evaluation issues early on. The discussion will consider these topics listed here, but feel free to address issues in any order in the sessions.

___ Jan 10: Overview of forecasting: Forecasting Methods Tree

Get familiar with <http://forecastingprinciples.com> and skim *Principles of Forecasting (PoF)*. An introduction to scenarios. Meet others.

___ Jan 12: Selecting Methods for the situation: Selection tree.

Pick a problem in marketing and describe how you would structure it and what methods you would use. Study “Demand Forecasting” by Armstrong & Green in full text on <http://forecastingprinciples.com>. See Structuring Sales Forecasting Problems on that site. Form two-person groups if you like.

Offer to conduct a forecasting audit for an organization. The purpose would be to eventually suggest ways of improving the forecasting in that organization.

Alternatively, select a problem for intensive study. For example, predict the decision made by key groups if the U.S. reduces troop levels gradually or rapidly.

___ Jan 17: Decomposition and segmentation

- 1) Start to do a forecasting audit for an organization.
- 2) Use the “Decomposition” chapter by MacGregor in *PoF* on a problem.

___ Jan 19 Simulated Interaction: Examine <http://conflictforecasting.com>

Forecasting for conflict situations such as for football strikes, wars, terrorism, or the introduction of change in organizations. Design a possible study.

___ Jan 24: Intentions and expectations: Use something from the Morwitz chapter in *PoF*.

Consider products, elections, marriages, and other behavior. Construct and test expectation and intentions questions for some problem. Try them out in class.

___ Jan 26: Expert opinions: Delphi and Prediction Markets.

Examine <http://pollyvote.com> Apply methods to predict who will win the next US Presidential election. As part of this, apply the Fair model and say how one might improve the model. Start a Delphi study.

___ Jan 31: Judgmental bootstrapping:

Study judgmental bootstrapping chapter in *PoF*. Plan an application for new product design, employee selection, or judicial decisions.

___ Feb 2: Analogies: Quantitative and Judgmental.

Government policy (e.g. gun control), new products, conflicts. Read the Green & Armstrong paper at <http://conflictforecasting.com>

- ___ Feb 7: Evaluating methods: Design of studies, error measures
Go back to each of the designs that you developed and say how you would test them.
- ___ *Also on Feb 7: Written report of a) progress to date, b) your forecasting audit and c) a time line for your projects for the rest of the semester*
- ___ Feb. 9: Extrapolation: Exponential smoothing with seasonal adjustment and damping
Find data on some series that interests you and prepare an exponentially smoothed forecast (do not use data on market prices). You can use the description in *Long-Range Forecasting* (in full text at <http://forecastingprinciples.com>)
- ___ Feb 14: Extrapolation:
Find a marketing series that looks unusual (e.g., due to price promotions). How would you modify exponential smoothing? Study the chapter on Extrapolation in *PoF*.
- ___ Feb. 16: Rule-based forecasting
Integration of judgment into extrapolation. How can you use manager's information in an easy way? Study RBF chapter in *PoF*.
- ___ Feb. 21: Causal models
Use prior theory (e.g., price elasticity studies), domain knowledge, and data. When regression helps. For example, set up a causal model to predict success of a marriage. Use a simple regression model (e.g., on Excel or other handy program. Freeware can be found at <http://forecastingprinciples.com> on the Software page. Predict the effects of a law that would make it easier for private citizens to carry a gun versus one that made it more difficult. Feel free to critique John Lott's book, *More Guns, less Crime*.
- ___ Feb 23: Causal models
Sales forecasting, presidential elections, college grades, marital affairs, happiness, marathon times, college grades, and criminal recidivism. Importance of policy variables (e.g., do you learn more when you go to class? Does increased spending on education lead to more learning?) See Ray Fair's book.
- ___ Feb 28: Causal models continued.
- ___ Mar 2: Progress reports and project proposals. Submit draft.
- Spring vacation (March 4-13)
- ___ Mar 14: Conjoint analysis
Predicting how consumers will react to different product designs and prices. Read Chapter by Wittink & Bergestuen on conjoint analysis. Freeware is available at <http://jscottarmstrong.com> under Educational materials/ Product policy
- ___ Mar.16: Segmentation
Top-down or bottom up? Read the segmentation chapter in *Long-Range Forecasting*.
- ___ Mar 21: Combining forecasts:
The Pollyvote and other applications. Study "Combining Forecasts" from *PoF*. Predict who will win the next U.S. presidential election. See <http://pollyvote.com>
- ___ Mar 23: Adjusting models subjectively
See the Sanders and Ritzman chapter in *PoF* and Paul Goodwin's paper Goodwin, P. (2005). "How to integrate management judgment with statistical forecasts," *Foresight: The International Journal of Applied Forecasting*, 1 (1), 8-11 under Full-Text papers at <http://forecastingprinciples.com>

- ___ Mar. 28: Monitoring forecasts and learning
Hindsight bias, contingency plans, and learning. Read Fischhoff chapter in PoF and relevant sections of Long-range forecasting.
- ___ Mar. 30: Assessing uncertainty with judgmental methods.
Judgmental prediction intervals (see Arkes from *PoF*).
- ___ Apr. 4: Assessing uncertainty with quantitative methods
Study Chatfield from *PoF* for developing prediction intervals.
- ___ Apr. 6: Gaining acceptance of forecasts
Gregory & Duran chapter from *PoF*
- ___ Apr. 11: Gaining acceptance of new forecasting methods
- ___ Apr. 13 & 18: Project presentations
- ___ April 20: Commencement
Write a letter to yourself about your plan to apply techniques from this course over the next three months. Put it in an addressed unsealed envelope and give it to Scott. He will mail it to you in three months.
- ___ April 27: Submit Portfolio to Scott by 4:30.