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Understanding the Future

Daniel Research Group

Understanding the Future

A Practical Guide to Designing and Developing Context Specific Segmented Forecasts and Models for Technology Markets

Dedication and Introduction

August 2012

Dedication

We have all been asked from time to time, which books have been the most influential in shaping the path taken.   One of the most influential for me was the classic science fiction trilogy, <u>Foundation</u> by Isaac Asimov.   I first read these three volumes, <u>First Foundation</u>, <u>Foundation and Empire</u> and <u>Second Foundation</u>, when I was in the 8th grade in 1956. They had been published in paperback just a few years earlier.

As in most science fiction of the day, the story takes place far in the future when humankind has spread throughout the galaxy.   The central plot revolves around the invention, evolution, and application of a new branch of mathematics called Psychohistory that can predict the course of entire civilizations with an extraordinary level of accuracy. The central idea is that although you cannot predict the behavior and actions of a single individual you can predict the actions and behaviors of large masses.   For an inquisitive and precocious young teen first becoming aware of the threats to humanity in the hot cold war climate of the time, this was an idea that offered both hope and direction.

Looking back, the education and professional choice I made were driven by a quest to discover the beginnings of what may someday evolve into psychohistory.   It has lead me to strive to understand the individual and the aggregate, the central and the extreme, and the nature of the human condition. It also lead me to the business of technology.   These choices have filled my life with interesting challenges for which I am grateful. Therefore, to the memory of Isaac Asimov and his inventor of Psychohistory Hari Seldon, I dedicate this book.

Stephen J. Daniel, President
Daniel Research Group
June 2010

Introduction

For 25 over years **Daniel Research Group** has worked with clients in the technology sector helping them gain a better understanding of the issues and trends influencing their decision making process by designing and developing **Context Specific Segmented Technology Forecasts** and **Market Models**.   Much of this work has been in collaboration with other consultants and market research firms who contribute market and technology project-specific expertise, knowledge, and insights.   This book presents my approach to designing and developing technology forecasts and segmentation models. It will be of interest to three constituencies:

✓ **Model Builders:** those individuals who are directly responsible for the design, development, and application of forecasts and models.

✓ **Knowledge Analysts:** those individuals who contribute the market and technology knowledge and insights that drive the model, and rely on the Model Builders to express that knowledge and insight in quantitative terms.

✓ **Clients:** the consumers and users of the forecasts and models who are responsible for making the decisions that are influenced by these forecasts and models.

As the title suggests this book is intended to serve as a practical guide. Part I address the major concepts and theories of technology market forecasting, Part II covers project management and model design issues, and Part II covers methodology choices and practical application. While the focus of this book is the market for technology products and services the concepts, many of the principals and recommended best practices are applicable to other product and services markets. Throughout this book, we will often refer to the three fundamental concepts that are the foundation of our approach: **Context, Collaboration, and Clarity.**

Context

The reason for constructing any forecast stems directly from context, in most cases, client decisions. The type of client, the nature of the decision, and the characteristics and particulars of the technologies and markets studied provide context. If a forecast is the answer, the model is the question. Of course, how that question is phrased will ultimately determine the appropriateness and accuracy of the answer. Context is an expression of the quantitative and qualitative characteristics of a market as defined by the client, and is manifested in choices about metrics, taxonomies, and methodologies.

Collaboration

Designing and developing market forecast models requires two sets of complementary core competencies, those of the **Model Builder** encompassing the mathematical, computational, and forecast methodologies, and those of the **Knowledge Analysts** encompassing qualitative assessment of the factors and trends influencing the products and markets being modeled.

The very best Knowledge Analysts are extraordinary people, experts in their area, and as such, think at levels of abstraction that are not easily quantifiable. They often develop their understandings intuitively rather than computationally. The single most important task of the Model Builder is to build a bridge between the Knowledge Analysts qualitative assessments of the market and the quantitative requirements of the model.

Clarity

Making choices from the large and growing inventory of methods, approaches, and model available requires that the Model Builder develop and maintain a clear understanding of the nature of these tools, their assumption, limitations, and strengths. The primary goal of this book is to present the Model Builder with an analytical framework for developing and maintaining this clarity in order to construct the most appropriate models and forecasts.

This book is divided into three parts. **Part I – Context: Theory and Background** will discuss the unique nature of the markets for technology products and services, present a taxonomy of forecasting approaches, review the evolution of the Life Cycle models, and summarize the basic concepts of Diffusion of Innovation. This part will conclude with two alternative models of technology adoption developed by the author.

Part II – Collaboration: Design and Management – will present a management framework for the design of Context Specific Segmented Forecast Models with an emphasis on the collaborative nature of the process. A structures approach to making design decisions will be presented that is built on a foundation of understanding context.

Part III – Development and Practice – will cover the most frequently used quantitative forecasting and modeling methods and approaches including:

- ✓ Trending and curve fitting methods
- ✓ Derivative, causal and multivariate methods
- ✓ Time series analysis
- ✓ External, internal and mixed life cycle models
- ✓ Segmenting methods
- ✓ Cellular automata models.

These chapters discuss the criteria to apply when making methodology choices as well as presenting specific application examples. Many of the methods presented in these chapters were developed by the author.

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Daniel Research Group offers consulting and market research services to clients whose products and services are technology based or enabled. The primary focus is on providing results, solutions, consulting and training to clients that have strategic and tactical decisions that require Forecast, Segmentation, Market Share, and other market modeling requirements These engagements are supported with the full range of traditional market research data gathering and analysis services, including quantitative and qualitative surveys, focus groups, demographic and firmographic data acquisition and analysis, as well as input from technology and industry experts. While our emphasis is on delivering data and actionable recommendations, we often design and develop custom models and modeling tools for client use as well as providing training in these areas.

Stephen J. Daniel - President

Mr. Daniel's three decades in the Information Technology Industry has given him a unique blend of Market and Technology experience coupled with a deep understanding of Market Research Methodology. His primary strength is in understanding the decision making context within which the results of his research will be applied. This is manifested by his ability to design and execute studies that precisely meet client objectives on schedule at reasonable costs.

After receiving his BS in Finance in 1970 from Northeastern University, Mr. Daniel earned an MBA in Quantitative Analysis from New York University in 1974. He is a member of the American Statistical Association, The Market Research Association of America, the American Marketing Association and the Qualitative Research Association of America.

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Daniel Research Group is a market research firm specializing in the design, development and application of market models and forecasts for clients in the technology sector including supplier, investors, and other market research firms. For more information contact Steve@DanielRG.com or visit www.DanielResearchGroup.com.