Revenue Management Technology in the Age of Big Data

Sponsored by HSMAI
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Robert Resurgent – The Revenue Company
Revenue Management Technology in the Age of Big Data

Robert Resurgent
Hotel RM Macro Eco-System

Throughout the Process

Communicate Expectations and Results
Hotel RM Micro Eco-System

Measure Demand
- Seasonality
- Holidays
- Feeder markets
- New Supply
- Group
- Special Events
- Dynamic pro-active marketing efforts
- Pace by Segment
- Pace by Distribution Channel
- Pricing
- Weather
- Costs/Access of Travel
- Acts of God
- Acts of Gov’t

Develop Strategy and Tactics
Segmented by
- Market
- Distribution Channel
- Room type
- Ancillary Revenue Segment
- Past history
- Dynamic Marketing efforts
- Feeder markets
- Guest profiling
- Social Media
- Campaigns

Forecast
- Simple Exponential smoothing
- Moving Average
- Linear Regression
- Logarithmic linear regression
- Additive Method
- Multiplicative Method
- Double Exponential Smoothing Method
- or combination above
- Primarily based on Arrivals and room nights
- Varies by type of hotel

Observe Results and re-analyze
- Forecast Accuracy
- STR Results

Re-Assess demand, strategy, and forecast
RM Systems automate about 30-40% of this process.

Long-Term Historical Averages
- STAR*
- P&L
- PMS*
- CRM

Shorter-Term Economic Factors
- Lead volume
- TAP
- CVB
- Demand/Rate 360*
- STR/PKF/PWC etc.
- Hotelligence/Agency 360
- Direct Web Denial/Regrets*
- OTA Demand
- Air Lift
- Special Events/Holidays*
- Pace*
- Weather
- Ratings Systems
- Dynamic Marketing Campaigns
Critical that you understand how this affects the RM System and how it works
RM Systems – Keys to Success

- Understand Limitations – The System and Yours
- Proper System and maintenance
- Do not manually override the system
- Work the system – constantly optimize and update
- Work with RM vendor
- Do not that misleads the system
THE EVOLUTION OF FORECASTING

Improvements in forecast are most dramatic when there is a fundamental change in the approach to forecasting (from No Forecasting to Naive, from Statistical to Demand Planning, and from Demand Planning to Demand Modeling). The combination of Demand Modeling and Machine Learning will decrease errors and lost sales by 33%.

<table>
<thead>
<tr>
<th>Error</th>
<th>No Forecasting</th>
<th>Naive Forecasting</th>
<th>Statistical Forecasting</th>
<th>Demand Planning</th>
<th>Demand Modeling</th>
<th>Machine Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assumes last year’s or last month’s demand value will occur again this month</td>
<td>60%</td>
<td>40%</td>
<td>50%</td>
<td>50%</td>
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<tr>
<td>Fits a forecast curve through historical demand quantities</td>
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<td>70%</td>
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<td>85%</td>
<td>90%</td>
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<td>Incorporates seasonality, trend data, and moving averages</td>
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<td>30%</td>
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<td>Is often done in Excel</td>
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<td>Becomes a nightmare to manage in Excel</td>
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<td>Hierarchy and causal effects are incorporated into the forecast</td>
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<tr>
<td>Leverages more granular and downstream data to get a cleaner demand signal and reduce volatility and bullwhip effect</td>
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<td>Includes techniques that are usually associated with short-term demand sensing to dramatically increase long-term accuracy</td>
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<td>Takes advantage of extended and even big data to further increase accuracy</td>
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<tr>
<td>Relies on powerful models to consider demand drivers such as promotional details, new product introductions, social media, etc.</td>
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</table>

ALL ACCESS IT
Forecast Tool Kit

Hotel RM Forecasting Methods – The Black Box

- Simple Exponential Smoothing
- Moving Average
- Linear Regression
- Logarithmic linear regression
- Additive Method
- Multiplicative Method
- Double exponential Smoothing method

- Or Any Combination above

Primarily based on arrivals and room nights

Varies by type of hotel

Outliers - Critical
Observe results and Re-analyze

Improved Retail Pricing

Forecast Accuracy

Results — STAR (gain share and profit)
Revenue Management Systems – Benefits

- Non-comp set based pricing changes
- Restrictions
- Retail Pricing decisions
- Predictive Model – Directional Forecasting
- Group Displacement Model Analysis
- Information vs. Data
Rational Pricing, weekday/Weekend Pricing

- Removed with technology

BAR Pricing

- Rate Tiers

Open Pricing

- Virtually eliminates LOS pricing, keep system open
Profitability Optimization and Multiple Revenue Streams

- Group Demand
- Total Hotel Revenue Management
- Digital marketing (CRM)
- Cost of Reservation Acquisition
- Predictive Analytics
Revenue Management Technology in the Age of Big Data

Predictive Analytics

◆ The aim of predictive analytics is to look forward. In the past, hotels have looked backwards at bookings, room rates and revenues in order to predict the future.

◆ The game changer is to bring in new data sources that provide a fuller picture into the future and, therefore have accurate forecast conversion and price optimization with the goal of maximizing revenue and profitability for the hotels.
What if We Could Understand Future Demand?

Current
Converted business is a small part of the greater opportunity

Opportunity
- Understand demand source markets and price elasticity
- Use data to maximize Revenue Opportunities
- Understand price points
- Grow direct business

- Visits on your website
- Lost Business
- Regrets & Denials
- Price elasticity & Sensitivity
- Future Demand
- Conversion and source markets
Benefits of Predictive Analytics using Big Data

BI focuses on collecting data on customer behavior, buying patterns, lost sales data combined with improvements in the accuracy of data mining and analytics tools. Add in 3rd party data sets and you a reliable predictive analytics.

Benefits:
- Predict Trends
- Understand Customers
- Improve Business Performance
- Drive Strategic Decision Making
- Predict Behaviors
“Big Data” has become a cornerstone of the hospitality business strategy in recent years. We need to understand what data is important for a particular hotel before moving on to create a coherent strategy that fully optimizes on the recommendations to come out of the predictive analytics process.
Big Data = Better Data
The New Data Sources.....
Selecting a Revenue Management System

<table>
<thead>
<tr>
<th>BUYING CONSIDERATION</th>
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</thead>
<tbody>
<tr>
<td>1- Technology Integration</td>
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<tr>
<td>2- Data Processing &amp; Analytics</td>
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<td>3- Pricing management</td>
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<tr>
<td>4- Channel Optimization</td>
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<tr>
<td>5- Customization to Property Needs</td>
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<tr>
<td>6- Cloud (SaaS) / On Premise Hosting/ Hybrid</td>
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<tr>
<td>7- Flexibility in Data Analysis &amp; Reporting (BI)</td>
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<tr>
<td>8- User Experience</td>
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<tr>
<td>9- Other Features &amp; Functionality</td>
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<tr>
<td>a) Demand Forecasting Management</td>
</tr>
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<td>b) Multiple Property Management</td>
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<tr>
<td>c) Non- Room/ Ancillary Revenue Mgmt</td>
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<tr>
<td>d) Group Pricing Management</td>
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<tr>
<td>10- Support, Training &amp; Consulting Services</td>
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<tr>
<td>11- Costs</td>
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