# Market Response Functions: An Application Comparison

| Application | Marketing Mix Modeling | Sales Resource Optimization | Enterprise Planning Model |
|---|---|---|---|
| Planning Issue | Size and allocate all or a portion of planned marketing budget including sales force for a brand (capacity constrained) | Size and allocate all or a portion of planned sales force budget across many brands | 1) Optimize the forecast for maximum profit by maximizing ROI of total sales and marketing spend<br>2) Optimize the supply chain, guaranteeing it can make and fulfill the new forecast<br>3) Resize and reallocate the entire projected income statement in support of (1) and (2) |
| Organizational sponsor | Marketing | Sales | Marketing AND sales, together |
| Response function form | Continuous | Continuous | Piece-wise linear |
| Plan of record forecast updated | Yes, for products involved | Yes, for products involved | Yes, for the entire projected income statement's forecast |
| Independent variable | Entire marketing mix | Sales force expenditures | Total sales and marketing spend |
| How forecast optimized | Prescriptively; nonlinear programming | Prescriptively; nonlinear programming | Prescriptively; mixed integer and linear programming |
| Objective function | Profit proxy: contribution margin by product | Profit proxy: contribution margin by product See NOTE, below | ***Profit*** |
| Granularity of forecast | Weekly | ? | ***Monthly*** |
| Best possible forecast, financially | No | No | ***Yes*** |
| Best possible forecast, operationally (e.g., observe constraints) | No | No | ***Yes*** |
| EMP's operational impact on installed applications | None; simply guarantees marketing-mix application executing against most profitable forecast | None; simply guarantees SRO application executing against most profitable forecast | None; simply guarantees ALL firm's planning applications are executing against most profitable forecast with optimally feasible supply chain |
| Reference articles | Hanssens, Parsons, | Sinha and | Article being drafted |

| Reference Articles | Schultz, Ibid, "Integrating Market response Models in Sales Forecasting at Polaroid," pages 391-393 | Zoltners, "Sales-Force Models: insights from 25 Years of Implementation, *Interfaces31:3, Part 2 of 2,* May-June 2001 | |

NOTE: From "Sales-Force Models" ibid, page S14: "…contribution margin is defined as net sales minus consolidated variable product costs, advertising and promotion costs, field-support costs and sales-force costs"