Decision Model	Strategic Sourcing Context where the Model is Applicable
Mathematical Programming Methods I. Goal Programming II. Multi-objective Programming (MOP) III. EOQ Model IV. Mixed Integer Optimization Programming (MIP)	Well suited for sourcing contexts where a predefined set of goals or outcomes is already defined by the firm and the criteria are quantifiable • MOP enables the simultaneous minimization of deviation from all goals with user-provided weights assigned to each of the goals • EOQ models, on the other hand, typically focus on minimizing procurement costs subject to various parameters relevant to fixed-cost order quantities and predefined volume price breaks • MIP models similarly employ a minimization or maximization function subject to a set of constraints; however, these models also include integer and/or binary decision variables
Cost-Based Methods I. Total Cost of Ownership a. Cost Ratio Method b. Activity-based costing	Total cost-based methods attempt to comprehend all transactional cost elements related to the procurement and movement of a component thro' entire supply chain • The Cost-Ratio method translates the cost of each non-purchase price activity into a percentage penalty of total purchase price that is then added to the purchase price of the component. Penalties can include logistics, quality, and service costs. The comprehensive comparison across all suppliers of the total "penalized" cost provides a TCO compare • ABC seeks to quantify all operational costs that a firm incurs in procuring a part
Multi-criteria Decision Aid Methods I. Mathematical a. Analytical Hierarchy Process b. Principal Component Analysis II. Conceptual a. Interpretive Structural Modeling III. Statistical a. Fuzzy Set Theory b. Cluster Analysis c. Discrete Choice Analysis Model (Conjoint Analysis) d. Data Envelopment Analysis	Structuring complex problems well and considering multiple criteria explicitly leads to more informed and better decisions. When the relative importance of each of the priorities is not given, multi-criteria methods can be employed to establish such relationships
Simulation-based Models I. Risk Based Models II. Neural Networks III. Vendor Profile Analysis (using Monte Carlo simulation	Simulation-based methods are commonly used to model supply chain risk but have also been applied to sourcing decision models (Wu & Olson, 2008). In situations where the complexities of interactions considered surpass the capabilities of a defined model, simulation is an appropriate tool that can aid strategic sourcing