

# Executive summary of shelby shelving



The decision depends on the optimal quantity that must be produced for each model. The key issue is the marketing department of the company and the controller of the firm have conflicts about Model S. The marketing department think that they should cut back Model S production because its' cost is higher than the selling price which make them having losses but Controller disagreed and he argues that they will be worse-off with lower production because Model S has a contribution to make overhead. The solution is the optimal quantity to produce each model at which the total profit will be the maximum.

### Model

Decision: How much to produce Model S and Model LAX Objective: To find optimal production for each Model which gives the maximum profit by using resources Assumptions: Machine requirements hours per unit: Model S: (Stamping-O, 3/Forming-O, 25) Model LAX: are given and known, Hours spent in departments: Model S: (Stamping-rash/Forming-rash) Model LAX: (Stamping-rash/Forming-rash), Unit Selling Price: Model S: \$1 800 and Model LAX: \$21 00 are given and constant Assembly Capacity: Model S: 1900 units and Model LAX: 1400 units Forming and Stamping Capacities: rash Current Monthly production: Model S: 400 and Model LAX: 1400 and accounting ATA based on this production level is also given and known.

Sensitivity Report: We used a sensitivity report to analyze how the optimal quantity of production is being affected by changes. Answer Report: We used an answer report in order to find bottlenecks and analyze them. Conclusions Answer (a): Shelby should produce 1900 units of Model S and 650 units of

Model LAX so that the total profit will be \$268, 250 which is the maximum monthly profit. The optimal allocation of resources and the time should spent in each departments are shown in Exhibit 1 .

Assembly capacity of Model S and Forming department are the bottlenecks. Interpretation -? With the contribution margin of \$625 Model S and \$690 Model L X, finding the optimal quantities which give us the maximum profit is calculated by Solver.

Answer (b): When we compare the optimal solution and the one given in the case, we see that our optimal solution has more balanced allocating resources in departments and fixed overhead cost is minimized.

Interpretation- With rents production the marketing department assumed that the costs will be higher if we increase the quantity of Model S produced. However, we can see that with the estimated current production the total cost of Model S and overhead costs are lower.

Also, the costs are lower for Model LAX, too. Answer (c): They should expand forming department because its a bottleneck. There are no slack times for forming. Interpretation- By expanding the capacity Of forming department the optimal solution may change or we can produce more both Models.

However, we should consider the overtime costs and the profit gained from expanding capacity of forming. Since the Lagrange multiplier for forming is \$489, which means the firm is willing to pay up to \$489 for an additional forming time.

Answer(d): If the material cost of Model S goes up by \$1 00, the monthly profit will be \$78. 250 because the reduced gradient is 1 37, 49 the production planning is not changing. Interpretation- With higher material cost of Model S, the contribution margin will decrease and the profit will decrease according to that. Answer(e): With reduced competition in market, the increasing selling price of Model LAX the new profit will be \$463.

250 if we did not make changes in production planning.