

## **Case Study 1**

### **Analysis of manufacturing operations due to Design Change**

Bharata Ltd is considering proposals for design changes in one of a range of soft toys. The proposals are as follows:

- (a) Eliminate some of the decorative stitching from the toy.
- (b) Use plastic eyes instead of glass eyes in the toys (two eyes per toy).
- (c) Change the filling material used. It is proposed that scrap fabric left over from the body manufacture be used instead of the synthetic material which is currently used.

The design change proposals have been considered by the management team and the following information has been gathered:

(a) Plastic eyes will cost Rs.15 per hundred whereas the existing glass eyes cost Rs.20 per hundred. The plastic eyes will be more liable to damage on insertion into the toy. It is estimated that scrap plastic eyes will be 10% of the quantity issued from stores as compared to 5% of issues of glass eyes at present.

(b) The synthetic filling material costs Rs.80 per tonne. One tonne of filling is sufficient for 2,000 soft toys.

(c) Scrap fabric to be used as filling material will need to be cut into smaller pieces before as and this will cost Rs.0.05 per soft toy. There is sufficient scrap fabric for the purpose.

(d) The elimination of the decorative stitching is expected to reduce the appeal of the product, with an estimated fall in sales by 10% from the current level. It is not felt that the change in eyes or filling material will adversely affect sales volume. The elimination of the stitching will reduce production costs by Rs.0.60 per soft toy.

(e) The current sales level of the soft toy is 3,00,000 units per annum. Apportioned fixed costs per annum are Rs.4,50,000. The net profit per soft toy at the current sales level is Rs.3.

#### **Required:**

(i) Using the information given in the question, prepare an analysis which shows the estimated effect on annual profit if all three proposals are implemented, and which enables management to check whether each proposal will achieve an annual target profit increase of Rs.25,000. The proposals for plastic eyes and the use of scrap fabric should be evaluated after the stitching elimination proposal has been evaluated.

(ii) Calculate the percentage reduction in sales due to the stitching elimination at which the implementation of all three design change proposals would result in the same total profit from the toy as that earned before the implementation of the changes in design.