

3.3 Break-Even Analysis: Assessment



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3.3 BREAK-EVEN ANALYSIS: ASSESSMENT

Read the case study below and answer the questions that follow.

T'RIFFIC T-SHIRTS



T'riffic T-Shirts Ltd is a company that specialises in online t-shirt retailing. The company's unique selling point is its creative and quirky designs. Anyone in the world can submit a design and if it is popular enough (i.e., gets enough votes) T'riffic T-Shirts Ltd will produce and market the t-shirt on its well-known website. The designer of each t-shirt is guaranteed a fixed percentage of each sale in return for their successful design work.

Each t-shirt sells for \$30 each. Designers get \$5 from each sale of each t-shirt that

they have designed. So popular is the site, the company's most successful t-shirt designers are able to make a living just by creating new designs for T'riffic T-Shirts. The company expects to produce and sell 100 000 t-shirts this year, although there is a total production capacity of 110 000 in the current factory setup. Fixed costs are \$400 000 per year. The direct costs of production are \$24.50 per t-shirt (this includes \$5 paid to the designers, the purchase of 'unfinished' t-shirts from a Chinese supplier, factory floor staff, dies, paints, postage, etc.).

Olivia Chrisp, the Operations Manager is examining a proposal put forward by the company's CEO to buy in a new automated screen printing machine that links with new design software. This would enable a new design and manufacturing process capable of producing very large runs of custom designs. The quality would be very much improved. Production capacity could be increased to 200 000 t-shirt per year.

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There are very large overheads associated with the purchase of the new machine and IT system, namely the high cost of financing these purchases. Total fixed costs would double to \$800 000 per year. Savings would be made by reducing the number of factory workers directly employed in the manufacturing process. Some of these savings would then be used to purchase in higher priced and higher quality unfinished t-shirts. Direct costs of production would decrease to \$17.50 per t-shirt. Research from the marketing department indicates that higher quality t-shirts, higher quality designs and a price reduction to \$25 would increase the demand for T-riffic T-Shirts by 50 per cent to 150 000 t-shirts per year.

Source: www.BusinessManagementIB.com

25 MARKS, 45 MINUTES

1. Construct a break-even graph to represent the current data, identifying the break-even level of production and the safety margin. **[8 marks]**
2. Management has decided that the RoCE (return on capital employed) should be at least 15%. In the case of current figures the net profit would need be at least \$200 000 to achieve this. Calculate the **output** needed if a profit target of \$200 000 is included. **[2 marks]**
3. Calculate the following:
 - i. The break-even level of output associated with the new manufacturing system **[2 marks]**
 - ii. The margin of safety associated with the new manufacturing system **[2 marks]**
 - iii. The profit associated with the current system of production **[2 marks]**
 - iv. The profit associated with the new manufacturing system **[2 marks]**
4. Based on monetary and non-monetary factors, advise the firm, as to whether it should remain as it is or to adopt the new design and manufacturing system. You should include an evaluation of the advantages and limitations of break-even analysis in your answer. **[7 marks]**