

Task IV. Technology Investment Analysis [25 points]

A car manufacturer is investigating if it would be a good investment to use their competitive advantage in advanced motor technology and car manufacturing to start building light airplanes.

The company made a feasibility study and concluded that they could target regional airlines as customers, selling to them airplanes with passenger capacity of between 70 and 90. The total demand for such airplanes is estimated to constant at about 1000 airplanes a year for at least the coming 5 years. With a list price of 250€ (all numbers are x10000 but for simplicity, use the given number format) per plane, they believed they would be able to get 40% market penetration. Naturally, some would request a more luxurious version of the airplane. It is estimated that 15% of the sold planes would be equipped with the extra package (in addition to the standard) for an average price of 50€. Once the planes had been sold, they also expected to sign service and maintenance contract for 60% of the planes sold (including extra package). The value (revenue) from the service and maintenance contracts is estimated to be 6% of the total revenue for these contracts service contracts.

The cost of manufacturing the planes is estimated to be 30% of the list price. The equivalent number for the extra packages is 50% and for service and maintenance, it is 60%. The annual marketing cost is estimated to be 400€ and other costs will be 600€, both of which will start with the mass production of planes.

The R&D needed for developing the new planes will be 10 000€ upfront and 9 000€ in year 1. The actual construction of the first plane (prototype plane) is estimated to cost in total 40 000€ of which 25 000€ is in year 1. The tests needed will cost 5 000€ initially and then 15 000€ in the first year. The investments in the infrastructure needed, will be of 20 000€ and 15 000€ (upfront and year 1). Once the factory is operational, the annual costs will be 5000€. First sales will begin in 2016 (the prototype is not for sale).

Assuming an investment period of 2014 as upfront and five full years (ending with 2019), and a discount rate of 25 %, what are the NPV, IRR and ROI of this investment? In which year, will the investment pay itself back?