

Harding plastic molding company

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On January 11, 1975, the finance committee of Harding Plastic Molding Company (HPMC) met to consider eight capital budgeting projects. Present at the meeting were Robert L. Harding, President and founder, Susan Jorgensen, comptroller, and Chris Woelk, head of research & development. Over the past five years this committee has met every month to consider and make final judgment on all proposed capital outlays brought up for review during the period. Harding Plastic Molding Company was founded in 1954 by Robert L. Harding to produce plastic parts and molding for the Detroit automakers.

For the first 10 years of operations, HPMC worked solely as a subcontractor for the automakers, but since then has made strong efforts to diversify in an attempt to avoid the cyclical problems faced by the auto industry. By 1970 this diversification attempt had led HPMC into the production of over 1000 different items, including kitchen utensils, camera housings, phonographic and recording equipment. It also led to an increase in sales of 500 percent during 1964 to 1974 prod. As this dramatic increase in sales was paralleled by a corresponding increase in production volume, HPMC was forced, in late 1973, to expand production facilities.

This plant and equipment expansion involved capital expenditure of approximately Rs. 10.5 million and resulted in an increase of production capacity of about 40 percent. Because of this increased production capacity, HPMC has made a concerted effort to attract new business, and consequently, has recently entered into contracts with a large toy firm and a major discount department store chain. While non-automotive related

business has grown significantly, it still only represents 32 percent of HPMC's overall business.

Thus, HPMC has continued to solicit non-automotive business, and as a result of this effort and its internal research and development, the firm has four sets of mutually exclusive projects to consider at this month's finance committee meeting. Over the past 10 years, HPMC's capital budgeting approach has evolved into a somewhat elaborate procedure in which new proposals are categorized into three areas – profit, research and development and safety. Projects falling into the profit or research and development area are evaluated by using present value techniques.

Assuming a 10% opportunity cost, those falling into the safety classification are evaluated in a more subjective framework. Although research and development projects have to receive favorable results from the present value criteria, there is also a total dollar limit assigned to projects of this category, typically running about Rs. 750, 000 per year. This limitation was imposed by Harding primarily because of the limited availability of quality researchers in the plastics industry. Harding felt that if more funds than this were allocated, “ We simply couldn't find the manpower to administer them properly”.

The benefits derived from safety projects, on the other hand, are not in terms of cash flows; hence, present value methods are not used at all in the evaluation. The subjective approach used to evaluate safety projects is a result of the pragmatically difficult task of quantifying the benefits from these projects into dollar terms. Thus, these projects are subjectively evaluated by a management worker committee with a limited budget. All

eight projects to be evaluated in January are classified as profit projects. The first set of projects listed on the meeting's agenda for examination involves the utilization of HPMC's precision equipment.

Project A calls for the production of vacuum containers for thermos bottles produced for large discount hardware chain. The containers would be manufactured in five different size and colour combination. This project would be carried out over a three-year period, for the sales. Project B involves the manufacture of inexpensive photographic equipment for a national photography outlet. Although HPMC currently has excess plant capacity, both of these projects would utilize precision equipment of which the excess capacity is limited.

Thus adopting either project would tie up all precision facilities. In addition, the purchase of new equipment would be both prohibitively expensive and involve a time delay of approximately two years. Thus making these projects mutually exclusive. (The cash flows associated with these two projects are given in exhibit-1)

Year	Project-A	Project-B
0	-75,000	-75,000
1	10,000	43,000
2	30,000	43,000
3	100,000	43,000

Year	Project-C	Project-D
0	-8,000	-20,000
1	11,000	25,000

Exhibit 2: Cash Flows

The second set of projects involves renting, computer facilities, over a one-year period to aid in customer billing and perhaps inventory control. Project C entails the evaluation of a customer billing system proposed by Advanced Computer Corporation. Under this system, all of the bookkeeping and billing presently being done by HPMC's accounting dept. would now be done by Advanced. In addition to saving cost involved in book keeping, Advanced

would provide a more efficient billing system and do a credit analysis of delinquent customers, which would be used in the future for in-depth credit analysis.

Project D is proposed by International Computer Corporation and includes a billing system similar to that offered by Advanced, and, in addition, an inventory control system that will keep track of all raw materials and parts in stock and reorder when necessary, thereby reducing the likelihood of material stock outs, which has become more and more frequent over the past three years. (The cash flows for these projects are given in exhibit-2).

Exhibit 3: Cash Flows | Year | Projects-E | Project-F | | 0 | -30, 000 | -271, 500 | | 1 | 210, 000 | 100, 000 | | 2 | | 100, 000 | | 3 | | 100, 000 | | 4 | | 100, 000 | | 5 | | 100, 000 | | 6 | | 100, 000 | | 7 | | 100, 000 | 8 | | 100, 000 | | 9 | | 100, 000 | | 10 | | 100, 000 |

The third decision that faces the financial directors of HPMC involves a newly developed and patented process for molding hard plastics. HPMC can either manufacture or market the equipment necessary to mold such plastics or they can sell the patent rights to Polyplastics Incorporated, the world's largest producers of plastic products. (The cash flows for project E and F are shown in exhibit-3). At present, the process has not been fully tested, and if HPMC is going to market it itself, it will be necessary to compute this testing and begin production of plant facilities immediately.

On the other hand, selling these patent rights to Polyplastics would involve only minor testing and refinements, which could be completed within the year. Thus, a decision on the proper course of action is needed immediately. The final set of projects up for consideration revolved around replacement of <https://assignbuster.com/harding-plastic-molding-company/>

some of the machinery. HPMC can go in one of the two directions. Project G suggests the purchase and installation of moderately priced, extremely efficient equipment with an expected life of 5 years; project H advocates the purchase of a similarly priced, although less efficient machine with life expectancy of 10 years.

The cash flows for these alternatives are shown in exhibit-4) As the meeting opened, debate immediately centered on the most appropriate method for evaluating all of the projects. Harding suggested that since the projects to be considered were mutually exclusive, perhaps their usual capital budgeting criteria of net present value was inappropriate. He felt that, in examining these projects, perhaps they should be more concerned with relative profitability of some measure of yield.

Both Jorgensen and Woelk agreed with Harding's point of view, with Jorgensen advocating a profitability index approach and Woelk preferring the use of the profitability index would provide a benefit-cost ratio, directly implying relative profitability. Thus, they merely need to rank these projects and select those with the highest profitability index. Woelk agreed with Jorgensen's point of view but suggested that the calculation of an internal rate of return would also give a measure of profitability and perhaps be somewhat easier to interpret.

To settle the issue Harding stated that the NPV, PI and IRR approaches would necessarily yield the same ranking order. EXHIBIT-4: Cash Flows | Year | Project-G | Project-H | | 0 | -500, 000 | -500, 000 | | 1 | 225, 000 | 150, 000 | | 2 | 225, 000 | 150, 000 | | 3 | 225, 000 | 150, 000 | | 4 | 225, 000 | 150, 000 | | 5 | 225, 000 | 150, 000 | | 6 | | 150, 000 | | 7 | | 150, 000 | | 8 | | 150, 000 | | 9

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| | 150, 000 | | 10 | | 150, 000 | From here the discussion turned to an appropriate approach to the problem of differing lives among mutually exclusive projects E and F and projects G and H.

Woelk argued that there really was not a problem here at all, that as all of the cash flows from these projects can be determined, any of the discounted cash flows methods of capital budgeting will work well, Jorgensen, on the other hand, argued that although this was true, she felt that some compensation should be made for the fact that the projects being considered did not have equal lives.

HARDING PLASTIC MOLDING COMPANY QUESTIONS

1) Was Harding correct in stating that the NPV, PI and IRR necessarily will yield the same ranking order? Under what situations might the NPV, PI, and IRR methods provide different rankings? Why is it possible?) What are the NPV, PI and IRR for projects A and B? What has caused the ranking conflicts?

Should project A or B be chosen? Might your answer change if project B is a typical project in the plastic molding industry? For example, if projects for HPMC generally yield approximately 12 percent is it logical to assume that the IRR for project is of approximately 33 percent is a correct calculation for ranking purposes? (Hint: Examine the reinvestment assumption rate) 3)

What are the NPV, PI and IRR for projects C and D? Should projects C or D be chosen? Does your answer change if these projects are considered under a capital constraint?

What return on the marginal Rs. 12, 000 not used in project C is necessary to make one indifferent between these projects under a capital rationing situation? 4) What are the NPV, PI and IRR for projects E and F? Are these projects comparable even though they have unequal lives? Why? Which

project should be chosen? Assume these projects are not considered under a capital constraint. 5) What are the NPV, PI and IRR for projects G and H? Are these projects comparable even though they have unequal lives? Which project should be chosen? Assume that these projects are not considered under a capital constraint.