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Title: A Critical Review of " The R&D Cycle: The influence of product and process R&D on Short-Term ROI"-3

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The purpose of this paper, " The R&D Cycle: The Influence of Product and Process R&D on Short-Term ROI", by Jehiel Zif and Daniel J. McCarthy, is to show and discuss the relationship between R&D cycle and the Rate of Innovation

Bringing new products successfully to market is the lifeblood for most organizations, but it is also a complex and difficult task. Of the nearly 16,000 new products introduced in 1991, almost 90 % did not reach their business objectives(1). It is hard to predict why some new products succeed while most fail. It is hard to predict why some R&D projects succeed while most fail.

Product R&D is designed to develop new products or to modify existing ones, where as process R&D is designed to develop a new production process or to improve an existing process. Many businesses find it difficult invest in process developments, it has been found that when a new product demand's increases, focus changes to satisfy this demand.

Product and process R&D have very different goals. The author has found that different conditions are required for process versus product innovation and that if both product and process are sought in one product unit, the unit will fail.

Based on the "S-Curve", which is a technique originally developed by McKinsey to record technological progress over a period of time. The author said that it represents the relationship between research effort and technical performance.

The researchers gave examples of some cases and studies to analyze the patterns of innovation and they explained the R&D cycle:

1. The commercial substitution of one technology to another through the S-Curve.
2. The patterns of industrial innovation through matrix with rate of innovation and stages of product maturity as vertical and horizontal axis respectively.
3. Aggregate measure to look at the relationship between R&D and "market performance".

After discussing the literature of the cycle they decided to talk about the relationship between the level of R&D spending for a strategic business unit, as well as its allocation to process and product R&D and their impact on the return of investment.

In order to be able to get an understanding of the influence, one needs to look at the profit implications of

R&D intensity. The diagram of the S-Curve in the paper shows the relationship between the R&D input and output. The amount of investment makes the product or destroys it. Businesses are the ones responsible for deciding what needs to be done in order to get

The data for this study was collected very carefully and analyzed to find the relationship of the R&D spending on ROI. It shows that the diminishing returns in short-term ROI is due the increase in the level of total R&D revenue. It is like the theory of demand and supply, if the market is not carefully researched and the businesses start to flood the market with a product, then that product loses its value and thus the price drops and a loss is noticed.

This report contains lots of datas, tables, and diagram to prove that there is a clear relationship between Product and Process R&D and short-term ROI. Though it has been found that the relationship is weak, it does show an evolving pattern which changes with the total R&D spending.

At each stage in the level of total R&D spending, the type of R&D that is found to be more productive in its influence on short-term ROI varies:

Stage	R&D/Rev.	Name	Positive Impact
I	0.25-1.0%	Efficiency focus	process R&D
II	1.0-3.0%	Innovation	Product R&D

III	3.0% and up	Extensive R&D	Process R&D

The conclusion that the researchers came up to was that by increasing the percentage of process R&D for companies with extensive R&D, and by increasing the percentage of product R&D for companies in the middle stage of spending, there could be a potential for improvement in short-term ROI.

After I read the article I was a little bit confused because what I thought was obvious, was being discussed in this paper. I was intrigued and when I read further I saw how important the product and process R&D are? So, the point is that the more money you spend does not mean that the organizations will have a profitable business, but the marketers need to know when to enter a market and when to make changes and when to quit.

The R & D cycle is an exciting tool for management to look at, study, because it offers unique ways and give people the opportunities to better their businesses and find ways to be profitable. There are risks, but with available tools, it is easy to tract the negatives and plans on the positives. with a good project manager, estimating the budget for the organizations.

You are summarizing the paper. Your contribution is minimal.

REFERENCES

1. L.Franko, "Global corporate competition: Who's winning, who's losing, and the R&D factor as one reason why". Strategic Manag. J., vol 10. pp 449-474, 1989.

2.D. Mowert and N Rosenberg, "The influenceof market demand upon innovation.vol8 pp 102-153, 1979.

3.W.E.Souder, Managing new product innovations. Lexington, MA: Lexinton Books, 1987.

4. C,H. Weiss, " The many meanings of reasearch utilization", Public Administration Review., vol 39, no5,pp,426-431,1979.

REFERENCES

1. L.Franko, "Global corporate competition: Who's winning, who's losing, and the R&D factor as one reason why". Strategic Manag. J., vol 10. pp 449-474, 1989.

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