

Corporate innovation online On-line user data analyzed by Factor

Factor #23 – the R&D budget

Factor #4 – seeking opportunities or cost reduction

‘Thinking about’ series

On-line lab results analyzed by Factor with other references

May 12, 2017

There are two Factors which address specifically the issue of generating ideas and making sure that good ideas survive and get implemented.

Factor #4, addresses a common issue as to whether management, in their planning and actions, communicate more information on the need to reduce costs or, on a more positive tone, the need to find opportunities.

The importance, or otherwise, of spending on R&D is the subject of Factor #23. Most companies which have been researched by CIO clearly articulate the magnitude of this spending and place substantial importance on this spending as a major source of innovative ideas.

Getting *ideas flowing* is one of managements’ main responsibilities. Priming the R&D source is important but is not the whole answer to managing an innovative company. CIO explores management’s role in idea generation and implementation.

On-line lab results

Having management encourage seeking new opportunities rather than cost reduction is more important than R&D spending issues.

Users of the on-line lab are clear that the most important of these two Factors is that management should provide leadership and focus on finding opportunities and not placing as much emphasis on cost reduction. Perhaps the shortage of interest in R&D, when compared to the other Factor, has to do with the mix of users’ companies using the lab and, more importantly, different understandings of the definition of R&D.

	Average ‘Ideal’	Median ‘Ideal’	Average ‘Delta’	Mode ‘Ideal’
F#23 – the R&D budget	1.88	2	2.23	0
F#4 – management seeks opportunities or cost reduction	2.8	3	3.13	5



Summary of contents

On-line lab results. *Having management encourage seeking new opportunities rather than cost reduction is more important than R&D spending issues.*

Defining R&D. *On-line results may be confused by user’s idea of ‘research and development’*

3M, GE, and Deere. *All companies which place emphasis on R&D and seeking opportunities.*

Getting on with ideas! *Three phases, each of which requires management support and involvement*

Corporate innovation online

On-line user data analyzed by Factor

The median and mode results are interesting. The median – the number in the middle of a given set of numbers – for F#4 is 3 and the mode – the most frequently occurring, or repetitive, value in this array of numbers, is 5.0.

For F#23, the median ‘Ideal’ is 2 and the mode is ‘0’, meaning that opinions were not strong and many did not have an opinion, and registered ‘0’.

Dissatisfaction, the difference between the “Ideal” and users ‘Reality’ is higher for Factor #4 at 3.13 than for Factor #23 at 2.23, perhaps not significant but none the less a forty percent difference between the two ‘Deltas’.

Results, noted here, may differ from the information which users receive in the form of a personalized report on making use of the on-line lab. CIO has, as a normal process of reporting on the lab results, modified the data to correct obvious errors. In any case, results from both sources are reasonably close.

Defining R&D

On-line results may be confused by user’s idea of ‘research and development’

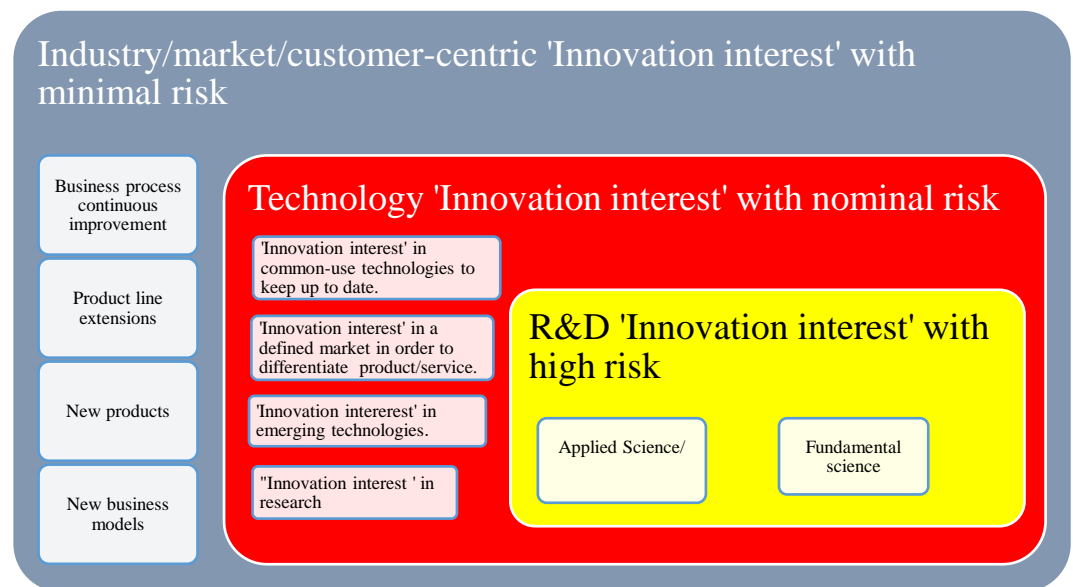
There is no way of knowing each user’s definition of research and development at the time of registering their opinion.

For CIO, research and development includes the full spectrum of innovation; from basic science through to continuous improvement. But this might not have been a user’s understanding.

To confuse the matter even further, CIO uses the term ‘innovation interest’ since emotional investment, while not involving

money, can be both positive as well as a distraction from the goals of the corporation. While this interest – emotion - cannot easily be measured, it is a factor to be dealt with.

R&D investment is often the bed rock of a company’s culture for innovation but not always, as some companies deliberately choose to be a follower. CIO’s experience suggests that most companies, deep down, want to lead and have an exciting environment for its staff. The



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Corporate innovation online

On-line user data analyzed by Factor

rationalization of being a follower, or just one of the ‘top three’, is more of an acceptance of the reality of a competitive position than it is the desire.

3M, P&G and Deere¹

All companies which place emphasis on R&D and seeking opportunities

CIO has researched these three companies in-depth to identify their management practices which have sustained these companies for decades. What has been their practice regarding R&D spending and the search for ideas?

3M, over its history, 3M has, almost without exception as a corporation, made it clear that the focus is on seeking opportunities. 3M has conveyed this direction in its literature², and most recently [and after the departure of McNerney] has illustrated its focus and reliance on the need to identify opportunities.

Under McNerney, the introduction of Six Sigma would have come as a shock to most 3Mers. Many wrote and expressed their discontent with the new focus on efficiency and cost reduction. Currently, under Thulin, Lean Six Sigma continues to be emphasized but under the banner of ‘creating the space for growth’. The agenda includes, employee productivity, cost reduction, business process changes, optimizing the organization structure, and inventory reduction; all part of an overall objective of improving margins and profitability.

The juxtaposition of Lean Six Sigma with and even greater emphasis by management on R&D illustrates an added dimension to the culture of 3M which was probably lacking prior to McNerney’s time with 3M. In effect, there is an acceptance and support for both programs. 3M is among a few large innovative companies which clearly communicate their goals. The emphasis on ‘new’ is a constant theme in most presentations and written material.

R&D expenditures have been a year-to-year priority and are probably above average for the industry although there are no comparative statements which would support the comparison since 3M has a unique set of products. The organization of research laboratories and their time-span focus clearly differentiates basic from developmental research.

‘For the first 35 years, 3M’s definition of research was “product development” not “pure” or “fundamental” research as research scientists define it’. Under Carlton 3M created its first Central Research Laboratory in 1937 with a two-fold purpose: to supplement activities of 3M’s division labs that worked on product refinements and to explore independent, long range scientific problems beyond the ken of any division’.

During the time of Lehr, the role of the Central Research changed with the setting up of a response to the shorter term needs of the 3M Divisions; a focus on 7 years out. Sector labs could

¹ See CIO report on ‘R&D’ spending reductions can portend a decline in performance; available on the web site.

² See Bernstein Strategic Decisions Conference 2010,

Corporate innovation online

On-line user data analyzed by Factor

handle 5 to 15 year spans and Central Research could return to its long-range mission focused on new ideas and a time span of 10 to 20 years.

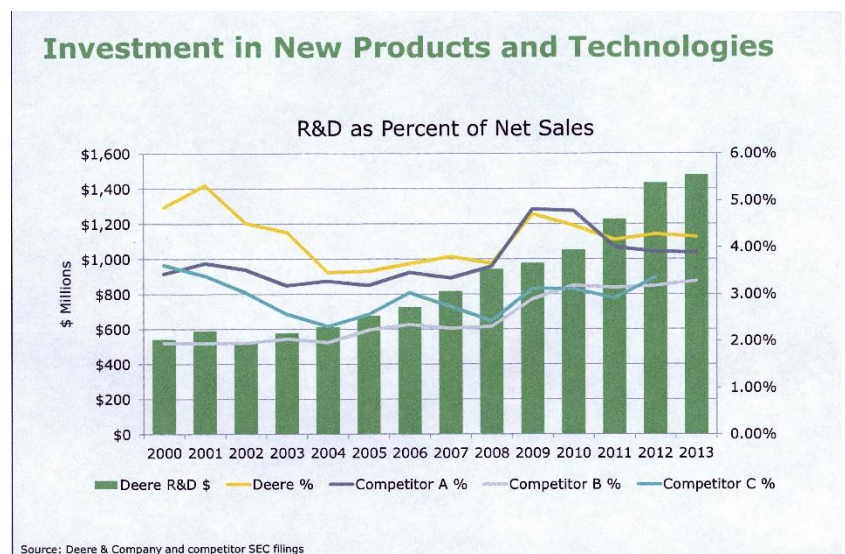
George W. Buckley, immediate past Chairman of the Board, President and Chief Executive Officer states in the 2006 3M Annual Report; 'To the outside world, what we do looks a little like magic. Our people have an uncanny ability to see customer needs and then meet them by drawing on 3M's deep pool of technologies – a pool supported by R&D-related investment averaging more than 6 percent of sales. We create entirely new product categories and breathe new life into markets crying for reinvention'.

Deere's systematic and long-term approach to the search for new opportunities is evident. Robert W. Lane in his address talks about how Deere is 'Driving Growth Through Innovation'. Emphasis is placed on 'investing in R&D over the long run, in good times and bad', and one of the pillars of Deere's program is entitled 'a sustained investment'. One of the Phases of the Accelerated Innovation Process, noted above, is called 'opportunity identification'; an ongoing process of working with Deere's strategic partners to come up with both 'sustaining' and 'breakthrough' innovation.

R&D has consistently run in the range of 4 to 5 percent of new sales, generally high for our industry... a spend rate of nearly \$2 million a day' according to Robert W. Lane. Allen has maintained this level throughout his regime.

A Yale graduate, Wiman placed an emphasis on expanded research and new product development, even during economic downturns. In 1934, in the heart of the Depression, John Deere introduced the famous Model "A" tractor. The Model "B" followed it the next year. Both tractors were highly successful and remained in production until 1952.

The company's commitment to investment in R&D is confirmed by John Lawson³, an employee of 44 years, who says that he 'never remembers a time anyone suggested cutting back on research and development spending, even in the toughest times. Cutting costs have been required in difficult times 'but engineering was always supported'. According to Magee⁴, spending on R&D is a reason the company has maintained an innovation edge throughout its history. Robert W. Lane was not



³ ibid

⁴ The John Deere Way

Corporate innovation online

On-line user data analyzed by Factor

above acquiring technology when at times Deere ‘is at times “innovation slow, invention light and customer focus hazy”’. The development of the R-Gator, for a military application, was done in partnership with iRobot.

P&G, prior to 2000, P&G relied heavily on new ideas from two sources; its marketing organization using highly sophisticated research techniques and its research and product development laboratories. With the adoption of immersive research P&G has, in a sense, gone at least one more level in its sophistication of market research. Similarly, with its ‘Connect and Develop’ initiative, it has extended the ability of its laboratories to make idea-creating connections.

P&G has, as a result of its adoption of innovation as central to its strategy, combined with the quantified objectives which relate to percentage of new products, and percentage sourcing of new ideas, focused the whole organization on the need to identify new opportunities. Rationing has taken a back seat to looking for opportunities. With the new emphasis on bottom-line performance, the balance may shift in favor of identifying cost-reduction opportunities.

What differentiates P&G from other organizations is its total commitment to these extensions of earlier initiatives. The result is a pervasive effort on the part of the organization to seek out opportunities.

P&G’s R&D expenditure has always been a priority and, over the long term, was much above the level of its main competitors. R&D spending has however been reduced as a percentage of sales since 2000 and now trends at between 2% and 3% of revenue.

P&G makes it clear that they believe that the company has exceptional talent and knowledge of the science behind all, or most of their products. Science is given a prominent position in the literature. ‘Our Research & Development efforts cover 150 areas of science. The ‘essential part of P&G’s R&D – world-class technologists who are masters of core technologies critical to P&G’s household and personal-care’ has not changed over the last several years. ‘While many people think of P&G as just a marketing company they are surprised by the enormous depth and breadth of the in-house science capability’.

Corporate innovation online

On-line user data analyzed by Factor

Getting on with ideas!

Three phases, each of which requires management support and involvement

Innovation has three distinct phases when it comes to moving ideas forward; invention, incubation and implementation.

The role of management varies by each of these three phases. During the invention phase, management needs to provide leadership and vision, encourage idea generation and manage the search process. During incubation, management needs to empower key personnel, commit resources and nurture projects. Finally, during implementation, management needs to set up the organization, launch and monitor the idea, and motivate and reward.

Factors #4 and #23 are only part of the answer for moving ideas forward. Several other Factors, also available to users of the on-line lab also have an impact on idea flow in the organization.

Not surprisingly, the on-line lab permits users to register their opinion for each phase.

- Invention, the search for and uncovering of ideas, is impacted by Factor #23 and #4, the subject of this paper, but also are impacted by, F#2, whether management asks explicitly, for innovation, F#5, tolerance for failure, to name just two additional Factors.
- Incubation is addressed by F#19 – whether there is a belief that if a good idea is forthcoming, that funds will be made available,
- Implementation is addressed by Factors #19 – as above, #7 and #14 which deals with specific motivational mechanism for innovators and innovation

It is the confluence of several Factors which create the proper climate for realizing commercial opportunities from sources of ideas.

