Fonterra Research Centre, Palmerston North, New Zealand

1%

Is It Enough?

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for the Kellogg Rural Leaders Programme
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Executive Summary

The purpose of this report is to look at whether the amount of money spent by Fonterra on Research and Development is enough. Currently Fonterra spend around 1% of turnover on Research and Development. The body of the report looks at where this money is spent and whether more would be advantageous. Shareholders Councillors were surveyed to see if they were satisfied with the current amount spent or whether they would like to see more or less spent. Some of the Fonterra Executives were also asked whether they thought enough was being spent on Research and Development. Comparisons between like companies Research and Development percentages of spend were looked in to, to see if Fonterra is being left behind. The outcome from this is that the spend is adequate at present but in the future it seems like it will need to be increased to ensure that the company stays at the forefront of dairy innovation.

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Introduction

Fonterra And The Research And Development Dollar

The purpose of this report is to examine the way that Fonterra spends its Research And Development (R&D) Dollar and whether is it enough.

It is easy to say that 1% of turnover is not enough for Fonterra to spend on R & D. The question is does the amount spent show a satisfactory return on the investment to make more R & D worthwhile. Shareholders of the company, which is a co-operative, may not want any more spent on R & D because 90% of their income from Fonterra comes from Commodity Milk Powders and not from the value-added products which goes into dividend. Also, they already put money for research in to Dairy NZ and Beef & Lamb through levies.

The questions I believe need to be answered are:-

- Who decides where the money used for R & D is spent and are they happy with that amount or feel it is not enough
- What is spent by other like companies – is it more or less than Fonterra spend
- Are Shareholders happy with the amount spent

From the answers to these questions perhaps some understanding will be gained into whether the amount spent is adequate. Therefore the report will go through these questions and the findings will hopefully give some clarity as to whether 1% of turnover is enough.

Part One

Looking Where The Money Is Spent

Fonterra is the world's leading exporter of dairy products responsible for more than a third of international dairy trade. Fonterra Co-operative Group was formed in 2001 and is owned by its 10,500 supplying shareholders. Fourteen billion litres of milk are collected by the tanker fleet from shareholders' farms annually, processed at the dairy factories and 95% of this dairy product is exported to customers in over 140 countries. Fonterra sells over 2 million metric tonnes of product a year and has an annual turnover of NZ$16 billion. Around one percent of this turnover is spent on Fonterra Research & Development (R & D) Programme making Fonterra one of the largest investors in dairy-based research and innovation in the world.

Fonterra Strategic Innovation Group is chaired by Fonterra CEO Andrew Ferrier, ensuring innovation receives the highest level of support in the company. The team oversees innovation activities, the balance of portfolio product and the capability and resources to support these.

The budget for money being spent by Fonterra for R & D is overseen by Dr Jeremy Hill, Group Director of Technology, who then passes this on for approval by the Executive Committee of Management. Dr Hill, who is based at Fonterra Research Centre in Palmerston North, was questioned to find out where and why the R & D spend decisions are made. Some of the following key points were discussed:-

- That first and foremost Fonterra is a business and that means needing to make a profit out of what is spent on R & D – there is no point just spending for spends sake

- The new technology being looked at needs to be able to be made into the product so there is no point looking if there is not the availability of plant to produce it

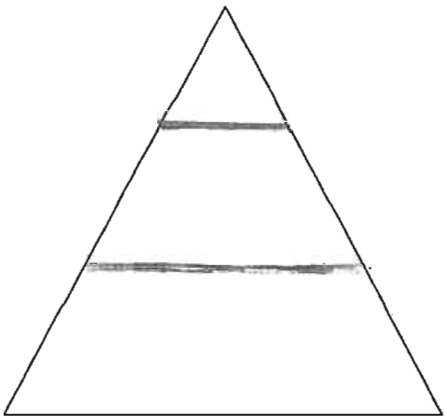
For these reasons Dr Hill is happy with the amount being spent. "It is all about getting the balance right," he said.

Figure 1.0 Balance of Products

Speciality products

Ingredients and brands

Commodities



Speciality Products – (e.g.Clear proteins, lactoferrins) these are very niche market products commanding very high dollar values but only small quantities of these sold to specialist companies

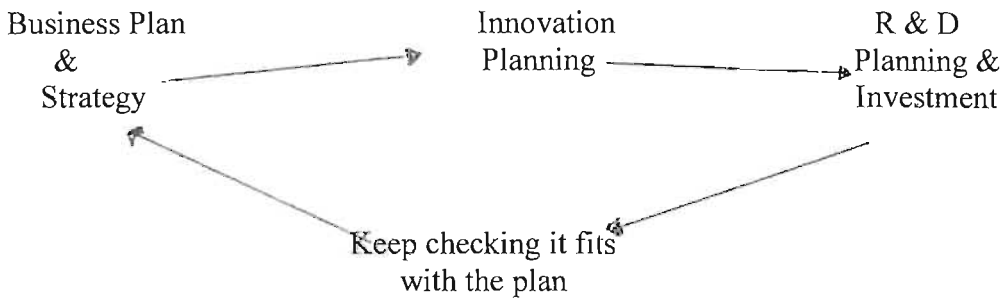
Ingredients and brands – (e.g.Dairy foods and yogurts) value is added to commodity milk with these

Commodities – (e.g.Whole milk powder and skimmed milk powder) largest amount sold but lower dollar value. Most money is made from these

This is worked on to get a balanced portfolio of spend – like building blocks getting the balance right makes a stronger whole.

The need is for a good Business Plan along with R & D Plan.

Figure 1.1 Fitting Together



The investment has to be put in first and a balance of short to longer term projects are included but the need is for more shorter term, as the longer term projects involve large time/value of money costs, the present value of money vs future value of likely return, and are therefore higher risk.

There are 350 staff, including over 100 world-class scientists, employed at Fonterra Innovation, the research hub in Palmerston North, as well as smaller centres in Australia, Malaysia, Germany and America. The smaller labs develop new products for the markets they are situated in, allowing innovation to be tailored to the needs of customers within these markets, whilst most of the fundamental research is carried out in New Zealand. The research is split into Manufacturing, which is involved with finding ways to lower the costs involved in the manufacture or product, and Brands Innovation and Ingredients which are involved in developing product to make profit through value add. Some recent innovations to come out of Palmerston North include a technique to condense fresh milk without affecting quality which can significantly reduce transport costs; C21 cheese, an innovation which makes

Mozzarella cheese for pizzas, a process which usually takes three months to manufacture, in eight hours; and an award winning reduced-salt Cheddar cheese which won the International Dairy Federation Best New Cheese award – a cheese for health conscious consumers who want lower salt but do not want to compromise on taste. Also a medical ice-cream, named Recharge, has been developed along with the University of Auckland, which has shown potential to combat some of the side effects of Chemotherapy treatment.

There have been 300 new product registrations in the last year from Innovations, with 45 in December alone.

Research expenses are put to a Marketing and Innovations balance sheet within each business unit but then consolidated for the figure of R & D investment which is given in a quarterly report to the Executive Team to give visibility of the return of the companies R & D investment, which gives comfort that this spend is well monitored.

Vialactia Biosciences is a biotechnology company operating as a fully-owned subsidiary of Fonterra. Their goals are to find and commercialise methods of selection of genes which are important to the dairy industry including those affecting pasture grasses, milk composition and production and animal health. This adds value to shareholders by mixing Fonterra's knowledge of markets and farmers' on farm practices with Vialactia's in-house research and alliances with other scientific researchers. This is of interest to show that investment in animal and crop genomics will improve production and efficiency by better selection of cows and grasses improving future production which will be vital to keep up with world population growth and the need to feed this population in the future. The funding for this in included in the R & D spend.

Fonterra also belongs to a network called Innovation Exchange where Intellectual Property (I P) is disclosed with potential innovation partners to find new products and technologies faster. This is known as Open Innovation, the sharing of information with others which can give opportunities to obtain innovation from many different sources, not normally considered or available, and to partner with different companies to find innovation for the betterment of both.

One of the issues which would arise if more money was put to R & D is that there is a lack of food scientists coming through the system to undertake research. To help ensure that there are future generations of scientists, the company is the major sponsor of the Sciences Roadshow that visits schools around the country. Fonterra sponsors a number of science and technology fairs nationwide, takes on undergraduates on a summer programme every year and has science graduates in the Fonterra Graduate Programme. Historically scientists have been better paid overseas so we lose many of New Zealand's prospective scientists this way. Conversely bringing in scientists from overseas is expensive because we need to offer the high salaries commanded in other countries to attract the best people. Also although in New Zealand Fonterra's innovation work is well known, it is not a company immediately recognised overseas so we may not attract the top people which is what we need to continue to flourish and grow. So the question must be asked whether it is advisable to pay top salaries to keep people working in New Zealand, which would take more R & D money.

Another issue is with all the work being done, staff are kept busy and very much on task with day to day projects. Because of this, there could be lack of ability to spend time on "blue sky

research" (research without a specific target or aim) and because of this, innovative opportunities may be lost. There is a very fine line in getting this balance right.

To better explain the issue of plant needed for process and the expenses involved with these, the following example is used:

It takes 10,000 litres of milk to get I gram of lactoferrin. Only 100 tonnes of lactoferrin, a protein of milk, is made worldwide annually. It is believed by scientists to have immune-enhancing and anti-cancer properties. The price of it is a closely guarded secret but thought to be up to $1,000 a kilo.

Fonterra is only one of six big lactoferrin processors, having built a $15 million factory at Hautapu, in the Waikato, six years ago. Most of the lactoferrin is now sold as an ingredient for infant formula and it has flat line sales at present but new scientific discoveries for its use could trigger a wave of demand to push up production. That trigger could be ReCharge ice-cream mentioned above. Trials for ReCharge are being carried out in New Zealand hospitals by Cancer Trials New Zealand to see if it works on humans as well as it has worked in animal studies. Trials in animals showed a protective effect on the intestine preventing diarrhoea, a side effect of chemotherapy treatment. These trials are about to go overseas, probably to the U.K. and U.S., to get population scales needed to convince regulators in other countries that the product works as claimed. Fonterra has spent $2 million getting trials to this stage and will need a partner for overseas trials as they are very expensive to run. The potential revenues are unknown if the trials are successful, but what works in animals does not always translate to humans. It comes down to how potent the ReCharge works out to be. Does it prevent anaemia or limit anaemia by preventing diarrhoea or limiting diarrhoea? If the trials are successful, more lactoferrin is needed to go in to producing this ice-cream. There could be

a need for massive capital outlay to build enough plant to make all required, and is that available?[iii]

All this goes to show how uncertain the world of research is.

With the changes in the Capital Structure of Fonterra, the new retention policy in place and the strongest balance sheet since the co-operative's inception, there will be more money to spend on plant to grow value in the Ingredients and Brands side of the business, according to the CEO, and R & D will no doubt be involved with this.[iv]

Part Two

What Do Shareholders Think About The Amount Spent?

Are the Shareholders of the company happy with the amount spent on Research & Development or would they want less or more is a question that needs answering. They have levies taken for Dairy NZ at 0.036c/kg milk solids which is 0.5%/kg at $6.10 but this is soon to be reviewed with the aim of going up. Also there is a 2% disease levy on stock killed and cattle meat levy of 0.5% per head. All of these are for industry good, which includes R & D, and with 1% of turnover of their co-operative going to R & D also, would this all be seen as enough?

To understand this, members of Fonterras Shareholders Council were asked the following:- As a Shareholder in Fonterra, do you think that 1% or less of turnover spent on Research & Development is

a) too much and should be less

b) enough and happy with this

c) not enough and would be happy with more

and were there any other comments they wanted to make.

Figure 2.0 Survey Results

The results of those who responded are as follows:-

Survey of Shareholders Councillors

Don't Know	Too Much	Enough	Happy For More
1	0	5	17

Though this is a small amount surveyed Council are a good cross-section of the Shareholder base, represent shareholders from the whole country and have an informed view having visited Innovations Centre this year. This suggests that the Shareholders are happy with the amount being spent, but more were keen to see a larger amount being spent as long as the benefits of the additional spending were seen and translated into additional profits for the company.

Some general comments –

- One comment was the amount of money spent on R & D adds little to the bottom line of payout – advertising and promotion spend could add more
- If the company wants to be leading edge and value add/profit driven and we need to increase our human capability to do this, then more spend will be needed
- Happy with this given that the Board has authorized spend to the level on recommendations from Management about cost/benefit considerations coupled with financial position and overall strategy
- We need to take a world-leading position with our customers. If the returns are there let's step it up, but are they?
- While the research spend has discovered many revenue earning opportunities, if this was doubled to 2% in line with other company research spend, then more potential "winners" could be developed
- Yes but would need to see more accountability of this
- Some concerns around there not being enough time for blue sky research and opportunities lost because of this

Part Three

How Much Are Other Like Companies Spending?

It is useful to look at similar companies to see what they are spending for comparison. With the volatility of the milk price and the exchange rate, Fonterra's total turnover can fluctuate greatly year on year. Because of this, the percentage amount spent on R & D can vary, for example in 2009 with the spike in the milk price the spend on R & D at $85 million was nearer 0.5%. Historically though Fonterra's spend is around 1% of turnover. These percentages work as a useful tool to benchmark against other companies.

Figure 3.0 Research and Development Percentages Against Turnover

Company Name	Turnover 08/09 +000	R & D Spent +000	R&D% of Turnover
Fonterra	16,035,000	85,000	0.5
Danone*	14,982,000	206,000	1.4
Nestle **	107,000,000	2,020,000	2.0
Zespri ***	1,542,037	9,500	0.6
Silver Fern Farms****	1,962,057	280	0.01

*Danone is the world number one seller, in volume, of fresh dairy products, number two in bottled water and baby nutrition and the European leader in medical nutrition.

**Nestle is the largest consumer packaged goods company in the world. Its product range includes baby food, coffee, dairy products, confectionary, breakfast cereals, bottled water, ice-cream, performance and healthcare nutrition and pet foods.

These two companies were used to show Fonterras spend against other dairy processors.

***Zespri is a New Zealand company marketing Kiwifruit worldwide.

****Silver Fern Farms is a New Zealand company that processes and markets lamb, beef and venison to the world.

These two were used to show Fonterra spend against other New Zealand companies.

Arla, Parmalat and Friesland Campina are dairy producers who process some of their milk in to their own products as Fonterra do. When talking to Koert Liekelema, General Manager of Fonterra Europe, he explained that Fonterra's spend on R & D is around the same percentage as these other companies.

Given that Danone and Nestle are food companies, once could argue that if looked at on a like basis 2/3rds of Fonterra products are commodity milk powder sold to the likes of these companies who spend their money on its R & D. Therefore the remaining value added portion gets three times as much so is then comparable to these larger companies.

The Ministry of Research Science and Technology (MORST) run a survey every two years on "Research and Development in New Zealand" looking at R & D investment within New Zealand and against the "Organisation for Economic Co-Operation & Development" (OECD) a group of 33 developed countries. The statistics for this are that New Zealand spends about 1.2% of Gross Domestic Product (GDP) on R & D against the OECD of 2.2% which would add to the validity of the above figures. It is to be noted that the government funding is higher than the OECD average while business expenditure is significantly lower.[vi]

This being the case the R & D spend is alongside the New Zealand average but is almost half that of OECD countries average. The fact though that most of New Zealand R & D is based

on primary production which tends to cost less than other types that some OECD countries make, such as automotive or technology driven e.g.Aerospace, should be a factor in this.

The recently announced Primary Growth Partnership (PGP) is a government/industry initiative that invests in significant programmes of research and innovation to boost economic growth and sustainability of New Zealand's primary forest and food sectors. More than half the funding of this seven year programme, totaling $170 million, will come from primary industry, with $29 million coming from Dairy NZ, $47 million coming from Fonterra and $9 million from other P.G.P. partners which are Synlait, Landcorp, LIC, Young Farmers, Agricultural Services and Zespri.

"This major investment will create the biggest change in decades in research training and knowledge transfer to increase the innovation on both sides of the farm gate, all of which can be leveraged to benefit New Zealand wider primary industries" *Quote from Dr Tim Mackie Dairy NZ CEO*

Whether this will make any difference to the above percentages remains to be seen but it is a real boost to on-farm productivity and sustainability as well as post-farm gate research in areas of nutrition, food structure and manufacturing and supply chain processes which the primary industry needs.

Part Four

Conclusion

Management of Fonterra are happy at present with the amount being spent on R & D, though going forward feel it may not be enough and will need to spend more.

The number of other countries beginning to produce milk powder at a lower cost than New Zealand can means that Fonterra will need to keep finding ways to keep the cost of production down whilst finding more innovative ways to add value to keep profits up. This will mean that at least the same, and probably more, will need to be spent on R & D in the future. It would seem that shareholders would be happy with this though, as the return on investment figures are commercially sensitive, they have to trust that the Management and Board of Directors are certain they are getting a good return.

It would seem that because some other companies are spending more than Fonterra, there is a risk that Fonterra could be left behind in the innovation race, therefore a close eye must be kept on this by the company.

It is important to look not only at dollars spent, but at dollars spent well.

References

Part One

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ii) As above

iii) Fast Innovation - Michael George, James Works and Kimberly Watson-Hill McCraw-Hill 2005 chapter 5 Page 93

iiii) Dominion Post Article Fonterra trials benefit of lactoferrin by Andrea Fox 4/11/2010

v) Personal conversation with Andrew Ferrier

Part Three

i) Fonterra Annual Results 2008/2009 Page 50

ii) www.Danone.com/en/company/ourcompany

iii) www.wikipedia.org.wiki.nestle.com

iiii) Zespri Annual Report 2008/2009 Page 64

v) Silver Fern Farms Annual Report 2008/2009 Page 76

vi) Minitry Of Research and Technology. Research and Development in New Zealand - A Decade in Reveiw Page 16

Part Four

i) Personal conversations held with Andres Ferrier CEO, Jonathon Mason CFO, Koert Liekelema General Manager Fonterra Strategy Europe,Jeremy Hill Group Director of Technology. All said they were happy with the amount being spent at present

Further Readings

Research and Development in New Zealand - A Decade in Review. A report by the Ministry of Research and Technology (2006)

The Future of Foods - Riddet Institute annual report (2009)

Statistics New Zealand Research and Development Survey (2008)