



How the Biotechnology sector views productivity

The Building Our Productivity team continues its research programme investigating firm level productivity issues.

This newsletter reports on the project team's work with organisations in New Zealand's biotechnology sector, and looks at how these firms view productivity.

Background information was collected on 28 firms working in a cross-section of the biotechnology industry, including nutrition, pharmaceuticals, medical therapeutics, medical research products, blood products, medical devices, and clean fuels. Interviews were undertaken with CEOs of 11 of the companies.

The team is now well underway with the second phase of in-depth interviews within these organisations, and would like to share with you some of the interesting insights emerging from the interviews and secondary data collection. Once again, despite the range of organisations within our sample, many of the themes reported here are common across the board. So in the following pages we will let the CEOs of the 11 biotechnology firms tell you about their organisational productivity.

Productivity is ... ?

The answer depends on how far down the track to commercialisation our companies are. For organisations yet to create a commercial product, productivity is about creating IP and meeting milestones. For some of those already manufacturing products, it's about producing high value goods at the lowest cost possible, while for others productivity involves maximising efficiencies in process control, sourcing supply and manufacturing to maximise gains.

" I think it's pretty simple, it's IP, production of valuable IP and achievement of milestones. Our productivity is a march down the track towards a commercial event, so the further we get down there, the more productive we are. [Bio 9]

[Productivity is] producing high value as efficiently as possible, and I think that's what we're involved [in] here. While we say 'Oh gosh, [we've spent] a lot of money, it's taken us a lot of time' – it's taken a lot of time for reasons, but I think to that extent we've been cost effective, to become a leader in the area. There is potential there too for a company that's based in New Zealand, manufacturing a product that has potentially very high value. [This] is a unique thing. [Bio 6]

Productivity is yield and it's the volume – the kilos per staff really, or it's kilos per week. How do you arrange the plant to get the maximum volume out? Within that, there's a whole lot of margin ramifications as well. [Before I came here, the company was] chasing product that had the highest dollar per kilo gross margin, which is fine if that complements your capacity. But they were choking on high dollar value stuff that they just couldn't make enough of. [Bio 2]

Money, money, money...

While money makes the world go around, for some of our organisations it can be hard to find. The means employed by our companies to raise capital is wide ranging. Two organisations are publicly owned, some are self funded, others have private investors and still others are funded through venture capital.

THE FIRMS WE INTERVIEWED ...

GROWTH PHASE: Some companies are in the product development phase while others are fully commercial with a range of product offerings.

FIRM OWNERSHIP includes family/privately owned companies, those with venture capital funding and publicly owned companies

SIZE OF FIRMS ranges from 6 to 115 employees, with a median of 16.5.

REVENUE RANGES from NZ\$0 to NZ\$35 million, with five companies producing no sales at all and of those that were producing revenue, a median value of \$4.075 million

MARKETS: Most of the commercial companies were exporting close to 100%, with only two companies having well-developed NZ markets.



Within the organisations there is a feeling that the NZ capital markets are under-developed, too generalist and too small to be of real use in funding the sector and this has forced many organisations to either look offshore for funding and/or to rely on finding high net worth individuals willing to invest in their businesses. There is an acknowledgement within some of the organisations that lack of capital has meant operations are very focused and lean.

There is further recognition that some very public biotechnology company failures in the recent past contribute to the difficulty of raising capital.

“ ” New Zealand venture capital, there are no specialists – so everyone’s a generalist – because they have to be generalist, what choice do they have? So we come along with a very differentiated idea, [and] they have no ability to judge it – they’ve got the problem of having to invest in a small place that produces lots of different ideas – whereas VCs in the US have got the ability to say, well we don’t actually invest in anything agricultural or anything pharmaceutical, we just invest in this, and that’s all we do. [Bio 9]

It’s been a difficult raise. 15 years ago the biotech model was to raise \$20-30 million, burn it in within 3 or 4 years to ensure you reached that stage, and then you raise another lot to get to market. The market now gives you money in dribs and drabs – 1 or 2 years at a time – and for that reason it’s very difficult. You spend a lot of your time talking, raising money, rather than trying to get things done.... The way capital is available [here], I think we just need a totally different model for New Zealand [Bio 6]

The capital markets here are incredibly immature and the quality in everything is so far under developed that they are quite restricting in some ways. [Bio 4]

Finding assistance...

All of the organisations have built relationships with government agencies such as NZT&E and FRST and for most, the benefits accessed through these agencies have enabled product and market development which would not have taken place without this assistance.

“ ” We got a grant for travel and marketing and we’re into our third year so that’s our last year of that, and it’s allowed us to go to [the places where we are in market development]. We wouldn’t have gone otherwise to be honest, [it’s been] wonderful quite a big help. [Bio 7]

One thing that is very good, is the market development grants – 50/50 cash thing. If you don’t spend it, you don’t get it. It’s incredibly effective because they leave it up to the business to decide where the best [use] of their money is. [They] put some parameters around what can be spent, but it’s really nicely administered.... without that, we’d probably have virtually no contact with them. [Bio 2]

NZTE have been very helpful in suggesting some contacts and places but I don’t know, we probably don’t use them that much, not because they are not helpful, we just haven’t. I always found it much better to have your own contacts. [Bio 4]

Biotech in New Zealand

Biotech means many things to many people and its definition is swayed by the area in which different companies work. So for some it’s about bio-pharma, for others gene expression, or therapeutics, but for others it appears preferable to avoid association with the term biotechnology altogether and focus on manufacturing. Within some of our companies there is a perception that New Zealand’s track record for biotechnology companies is poor, with companies failing, good ideas not getting to market and difficulties in finding investors keen to work in the biotechnology sector.

“ ” We are here because we believe that it’s possible to come up with an innovation from this country. It will give me great pleasure if we can really get this to be successful and develop a product and manufacturing here, it will be wonderful. [Bio 6]

We are going to change [our name] because the word biotechnology is an anachronism for a lot of people [including new investors], it really is a lightning rod and people associate the word biotechnology with therapeutics. [Bio 5]

I reckon it’s the black spot in the pirate’s palm. A lot of our biotech companies have come with a bang and then just disappeared and I think we’ve got a pretty bad record in terms of biotech development, we’ve never really used that term to be honest, we’re manufacturers. [Bio 2]

We never thought about [what being a NZ biotech means]. We don’t mix with bio people and we don’t feel part of that community really, we’re just off there making stuff. We wouldn’t think of them as our customers and we’d rather spend time visiting our clients or potential clients. [Bio 7]

New Zealand – clean, green and traceable

We’re known as clean and green and free of agricultural disease, and this was highlighted as an important advantage by many industry players, particularly those who source raw materials from meat processing plants.

For these companies the accreditation of processing plants for export markets allows them to coat-tail off the meat plant’s processing practices and gives them certification into the same export markets, an important factor in our companies’ choice of suppliers.

Additionally, the traceability of animals back to the farm gate was highlighted as an advantage in marketing their products. This coupled with the fact that our companies perceive that their customers hold our regulatory authorities in high regard gives them confidence that New Zealand products are able to find a way to market.

“ ” Within the scientific sector there is a certain degree of knowledge that New Zealand origin is high value. This is useful in terms of market accessibility, market access, generally customers are very sympathetic to a product of New Zealand origin. [Bio 1]

There is a formal certification process that we go through from start to finish. And [our choice of the meat works] would depend on their own certification capacity. In other words, if they are approved as an exporter to the countries we are interested in we can use that. [Bio 1]



Our founder's old business associates in Asia contacted him because New Zealand is one of the few foot and mouth and BSE-free countries [in the world], and they asked him to send [product] over... As well, we have excellent animal management control here. So we would know out of every day's production where those animals came from, which farms. So you have traceability of animals. [Bio 7]

Signalling credibility

While being based in New Zealand has advantages, it also presents challenges to the majority of our organisations. Described as creating a tyranny of distance, New Zealand's location means our firms have to work hard to signal to their customers that distance from markets won't create logistical issues in either product delivery or in levels of service.

Our companies use a number of approaches to signal their credibility, that their products are high quality and that they offer a high level of service to customers. These include using client based production standards, GMP certification of production processes and being publicly aligned with internationally renowned experts and leading investors within the industry.

“” We certainly push the fact that we've got internationally known scientists behind us, some of whom are New Zealanders. One particular product development is directly from a publication by one of our founders, and people are really impressed when they hear who's behind it. They ask, why has this small company in New Zealand got all these things, how did we get a licence for that? And I say, well, [X] is on our Scientific Advisory Board and they say – Ha! [Bio 10]

We approached a US-based VC, one of the biggest venture capital groups in this area and they invested in [us]. If you've got [these VCs] on board people take notice, you always get the first meeting. [Bio 9]

New Zealand standards have no bearing on what we do here, it's the standards of our clients. We get audited by these clients once a year and they want to drive the standard up, [as well] we've got a training budget [in the tens of thousands] for industry requirements like good manufacturing practice (GMP). [Bio 3]

Outward FDI

One of the ways that companies signal that they are serious, committed and able to deliver on products and promises, is by investing offshore to be close to market. About half of our companies had either undertaken some form of outward FDI or were planning to do so in the near future through acquisitions of partner companies, opening offices or running operational plants in offshore markets. Investing in such a way gives our companies a visible presence in the market and helps to overcome the logistical difficulties in product and service delivery inherent in being so far from market.

“” We are here because we believe that it's possible to come up with an innovation from this country. It will give me great pleasure if we can really get this to be successful and develop a product and manufacturing here, it will be wonderful. [Biotech company CEO]

“” [In the US markets] the ideal scenario is they think they're buying from a US company and they're reasoning that if we're from New Zealand, we're a long way away and our service will be poor. So actually we want to play down that we're remote, As much as we want to promote the brand and we don't mind people knowing it's from New Zealand, we want people to think that they've got local backup and are locally supplied, that's the trick really ... We are looking now at setting up a logistics centre in the US and one in the UK. [Bio 10]

In 2008 we purchased a company in the US which is a business that does clinical research. I worked with the two people who started this company and because they have their presence in the US, they are touching our clients first at the concept stage, whereas we wouldn't normally do that. Normally we would be touching the clients at the invention phase, but because they do that, we can offer them the whole package – early stage, research, manufacturing. [Bio 3]

Innovation

Our biotechnology organisations are innovation-driven businesses. For some on the cutting edge of science, innovations come from science advisory boards and leading scientists who partner with the organisations. For others, innovations are market driven with gaps becoming visible in niche areas, clients leading the way with new ideas, or the organisations developing extensions to the way their products are used.

Often these companies face problems not with a lack of innovative ideas but because the number of new ideas coming to the fore makes it difficult to choose between the many different directions the organisation can take.

In general, innovation processes were informal, but were managed from the top of the organisation.

“” If we are looking at a new product there are two things: is it technically difficult or not; and is it there already. We do some products not because there is a huge market demand but just because of our process, if it isn't a great effort to modify something and create a new product. If it's technically difficult then you have to have market forces for that product, because that involves far more effort in investment to get the process established. [Bio 1]

Last year we launched eight new products and that's probably double other people in the industry in our field ... We have two R&D groups, one is technical people, the other is business people. Because the technical people are busy inventing all sorts of things it's important to have an R&D group which has the science part and an R&D group that has the business part, it's quite lacking in New Zealand. [Bio 3]

Not all of [the new products are our ideas], about two thirds are licensed from other people. We try and work in partnership, we are doing co-development with some guys in Europe, where we pay the joint venture and share the profits. [Bio 4]

A Global business

Biotechnology is a global business, and for our organisations the search for talent and partners is conducted on that scale.

While some of our organisations partnered with locally based scientists and research institutions, the majority looked more broadly and sourced expertise from many countries. Companies have found partners and/or recruited key personnel from Russia, the US, China, India, Germany, the UK and elsewhere.

For these companies, finding and using global expertise is part of every-day business.

“” This place was set up by a whole bunch of kiwis, but we had to get an FDA expert in to guide the whole approval process. She came down here for a week every month for 9 months and we sailed through FDA with a pass. She assisted with the audit as well. [Bio 3]

You know at one stage there, we had a problem with a technique which wasn't working for us and we couldn't do it. We'd never done them before and we were going to try and reinvent the wheel. So in the end we used our science advisors to find a woman in the States who developed her own techniques and we flew her down here for three months and brought her back here every second week for another couple of months. You use whatever you can to do it. It's a global world so you find capability somewhere. [Bio 5]

We collaborate with people for skills that we need, For example, [one of our technologies] we did with some people at [X] University, and we've patented our work and brought the technology back here. [For other research], we collaborate with a lot of experts worldwide – in Germany, US, Scotland, Australia – there are still one or two tests that we don't bother to do if somebody else can do it to the standard that is accepted by regulators – we just outsource them. [Bio 6]

Key positions – Science leaders & Senior managers

Along with finding global exports, our companies search worldwide to fill key science, managerial and leadership positions. In the main our companies are searching for people with northern hemisphere or market place experience within their niche sectors to lead the New Zealand based science, development and manufacturing teams. These are highly skilled people, and sometimes are expatriate kiwis returning home. For a number of our companies, there is a drive to employ senior staff who are diverse in race, skills, workplace and education to help with both innovation and taking products to market.

“” We have a management team of seven people, five of whom have over two decades experience working in America and the EU, and the reason is because New Zealanders don't have the experience required to service those markets, they've never worked there. These [managers] cost us a fortune, but they bring us a tonne of expertise. It's not to say New Zealanders are not capable, it's just they don't have experience and the only way to give them experience is to have them working with people who have done it. [Bio 3]

This is the cutting edge of science, and we've been able to employ people from very different backgrounds to come and sit around the same table and stare at the same problem and come up with different ways of thinking. It's very challenging, it's very argumentative, and what comes out of it is lots of ideas – the challenge often is which direction of the many could you take? [Bio 9]

Employee skills

In general, the staff employed at our biotech companies are 'clever', they tend to be educated to graduate and postgraduate level. They are not however, generally skilled in the specifics of the roles required by the organisations and because of this, organisations work hard on skill development in diverse areas such as management training, specific role development and commercialisation.

“” We keep a schedule of the training status of all the staff and the processes that they are trained in and we have a plan to bring other people up to speed or if there's a certain process that we don't have enough people trained in then we can improve that. We might choose to produce that product even though the market is not necessarily crying out for it, just to increase expertise for that particular process. [Bio 1]

There are a lot of good science graduates coming out. We advertised for a research R&D person and we got 40 applicants, a lot of them [with] very good credentials. So, now we can bring in these graduates and we can train them into our way of doing things to the benefit of the expertise base in New Zealand. [Bio 10]

The guys that were here were research scientists, discovery scientists, and bit by bit they had to walk across that whole space of developing a prototype and then doing all the validation science and getting into commercial science. So the skill sets that [they] learnt and the disciplines enforced on the enterprise make it very valuable, because these guys now know how to do this. [Bio 9]

ABOUT THE BUILDING 'OUR' PRODUCTIVITY PROJECT ...

THIS RESEARCH PROJECT seeks to increase knowledge about productivity levels within New Zealand firms, using a case study approach to examine practices and processes within two sectors – food & beverage and biotechnology.

FOOD & BEVERAGE is a labour-intensive 'backbone' sector of New Zealand's economy with large revenues but a low growth rate – future growth is seen to be in increasing the value (rather than volume) of products.

THE BIOTECHNOLOGY SECTOR is newer and smaller, with a recent growth rate of between 20-50%. This sector is innovative and knowledge-based, with a highly skilled workforce and strong alliances between firms and research institutes.

www.victoria.ac.nz/vms/buildingourproductivity

