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**Show me the Money:
Perspectives on Applying for
Government Research and
Development Co-funding**

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By Nick Kearns and William Beale



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Show me the Money: Perspectives on Applying for Government Research and Development Co-funding

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Abstract

In 2012-14 Unitec Institute of Technology (in partnership with The Innovation Workshop) carried out research into the application process for New Zealand Government Research & Development [R&D] co-funding administered by the Ministry of Science & Innovation (now Callaghan Innovation Ltd). This research revealed widespread applicant frustration with the application criteria and process. A significant problem perceived by High Value Manufacturing and Service Small Medium Enterprises (HVMS SME) businesses is the focus of R&D funding on product innovation followed by a lack of funding to support later stage commercialisation of products. This later stage of product and market development is excluded from Callaghan Innovation co-funding, leading to 'prototypes-on-a-shelf'. Applicants also found the process time consuming, due to the complexity of the application questions and the delays in response from the funding network of regional funding partners and the Government Ministry. HVMS SME often used consultants to help manage the application, which is frowned upon by both the regional funding partners and Callaghan Innovation, despite the high levels of co-funding success from these applicants. This work has been carried out during the establishment period of Callaghan Innovation Ltd and some of the above issues may be historic and/or transitional as the institutional arrangements change. This research records the HVMS SME experience in applying for R&D co-funding.

Consideration of the user experience, captured in this research, may reveal opportunities to improve the process with better outcomes for the applicants and the economy.

Introduction

New Zealand has long been a primary produce exporter with heavy reliance on meat and dairy products as the mainstay of our export earnings. Successive governments of all political persuasions have recognised the need to diversify our economy away from such commodities and into higher value goods.

One of the tools used to support existing businesses, and also to bring about change in the export mix, is government co-funding of research and development. The R&D co-funding arena has been undergoing change over the last few years as the government seeks to increase efficiencies and drive their platform policy for economic growth as outlined in the Business Growth Agenda (New Zealand Government, 2014).

Prior to July 2012 the Ministry of Science & Innovation [MSI] was responsible for administering R&D co-funding to the business sector. In July 2012, MSI became part of the newly created Ministry of Business, Innovation & Employment [MBIE]. Following that, responsibility for business R&D funding was transferred to Callaghan Innovation when it was established as a stand-alone Crown Entity in February, 2013.

Callaghan Innovation is the Advanced Technology Institute [ATI] called for by various reports commissioned by the government with a view to accelerating the growth of the economy (New Zealand Government, Cabinet Economic Growth and Infrastructure Committee, 2012).

One critical aspect of Callaghan Innovation is the role to act as "a single front door to the innovation system"

(Joyce 2013), giving businesses a one-stop-shop for:

- Advice for businesses on innovation
- Co-funding of business research and development
- Provision of research and technical services

Research had shown that the support and funding provision for business innovation was fragmented, difficult to access and not well understood by the potential clients (Martin, Jenkins & Associates Limited, 2012). Callaghan Innovation was designed to pull these threads together into one more easily accessible and widely understood operation.

As an ATI, Callaghan Innovation maintained the employment of 320 scientists from Industrial Research Limited [IRL], a Crown Research Institute [CRI] that was disestablished as Callaghan Innovation was established. It is this resource which provides the research and technical services.

In addition to this, Callaghan Innovation has taken over the administration of the MBIE co-funding portfolio, and in October 2013 announced a new range of co-funding products (Joyce, 2013).

Callaghan Innovation has taken some time to find the necessary staff and set operating procedures, given the challenge of integrating new and existing elements (such as 320 IRL staff) into a new entity. As the end of 2014 approached they had largely completed staffing and were consolidating into the role of being “a single front door to the innovation system”(Joyce 2013).

The concept of a New Zealand National Innovation System [NIS] has been in the literature since Engelbrecht & Darroch (1999) argued that New Zealand had a weak NIS (in comparison to nations from the Organization for Economic Cooperation and Development [OECD]). This is despite a raft of changes being made to the research science and technology sector since the 1980s. More recent assessments of our NIS. Lerner, Moore & Shepherd (2005) identify high levels of research publication but below-OECD-average business R&D investment, low levels of commercialisation of research results, and low levels of patenting (New Zealand Government Treasury, 2008).

A key function of the NIS is to source and support

innovative businesses, and one of the mechanisms for this in New Zealand is the R&D co-funding provided by the government. As the structure of the NIS in New Zealand takes shape, this research focuses on that funding process from the perspective of small innovative businesses, who are the intended users of the system.

The need for a dynamic small and medium enterprise [SME] sector with the capability to innovate and scale new products is central to the diversification of the New Zealand economy and the institutional changes to make this happen are well thought out and researched at the macro-economic level. There is also a need for the microeconomic (or individual firm) perspective to be considered as the processes will operate in a business led manner (Joyce, 2013, p3). If the processes do not serve the individual businesses well, then the system as a whole will ‘fail to fire’.

This research arises from the need to understand HVMS SME perspective on the R&D co-funding application process more closely, so that any identified problems can be resolved during the time of change as Callaghan Innovation takes shape, and before the situations “refreezes” (Lewin, 1948 cited in Nelson & Quick, 2009, p. 292).

Anecdotal feedback from many SME businesses in west and north Auckland had suggested that the R&D co-funding application process was arduous, time consuming, uncertain, and many who had applied once would not do so again. This is a worrying observation if the feedback provided proves accurate. In a co-funding regime that is characterised as a business led approach to funding in which the initiative rests with the applicant (Joyce, 2013) it appears the system may be frustrating the clients it seeks to attract.

To check the veracity of the anecdotal evidence regarding the difficulty of R&D co-funding applications, a series of qualitative interviews with eleven HVMS SME and three larger HVMS funding recipients was completed. This research was conducted with a view to developing a research tool for use with a much larger sample of HVMS businesses to gain a quantitative perspective.

The interviews provided strong support for the view that the application process was not working smoothly. They also raised questions on whether New Zealand has a National Innovation System [NIS], and if so, how well the

NIS is working, and how it might be improved - from the perspective of the co-funding applicant.

Two key findings emerged from the research; 1) the need for further work on the place of R&D co-funding on the 'path-to-market' and other funding options for market development from within the NIS and, 2) the strongly held and opposing views on the use of consultants to help with completing co-funding applications.

Literature Review

A predominant theme in the literature on innovation in New Zealand is the need for an effective NIS (Raine, Teicher & O'Reilly, 2011; Boven, 2009; Lewis, 2008), as well as various attempts to evaluate the success of the NIS (Englebrecht & Darroch, 1999), or lack of success of the NIS (Oxley, Hong & McCann, 2013) at lifting New Zealand's economic ranking in the OECD. The references listed here generally take a macro-economic approach, and discussions are at the level of institutional arrangements (Raine et al, 2011), industry or sector analysis (Hartwich & Negro, 2010), and policy recommendations for either government or industry bodies (Raine et al, 2011; Collier & Gray, 2010).

Reviews of the functioning of the NIS (or similar arrangements) that have been undertaken focus on operational policy settings and factors such as economic conditions affecting R&D co-funding uptake (Carran & Stroombergen, 2009). The sampling of businesses by Carran & Stroombergen (2009) was based on taking the largest co-funding grants awarded during the study period, which also meant only the largest businesses were interviewed.

As most businesses are not large, and given the widespread understanding that successful innovation is more often found in SME than larger businesses, any research that excludes SME through sampling practices such as taking only the largest funding awards, cannot be seen as representative.

These are valuable contributions to considering the New Zealand Innovation System as high-level design, analysis and implementation guides, but they leave a gap in the literature as to how some, if not most, of the intended users (HVMS SME) of the NIS see it working.

International research on this topic also focuses

on institutional arrangements at the macro level. The EU foreshadows the New Zealand experience with trends such as funding agencies independent from government and decentralised funding decision-making emerging from the mid 1990s. Similarly seeking more flexibility through different funding products has been dominant in EU policy since 2000 (Radosevic & Lepori, 2009).

The EU literature states the importance of trying to balance issues of local and global relevance, (recognising that SME goals may be different to the macro-economic goals) as well as the need for diversity in the R&D funding applicants. Resultantly governmental objectives of excellence can be well served by competition among the applicants (Radosevic & Lepori, 2009). The systemic perspective revealed in Radosevic & Lepori is very similar to much of the New Zealand based work on R&D funding processes.

Other research highlights the impact of limited financial resources on R&D and how SME are more affected by this than larger firms (Czarnitzki, 2006). 42% of West German SME in Czarnitzki's study do no R&D due to financial constraints, compared to 14% of larger firms (Czarnitzki, 2006). This result is a strong indicator of the need for R&D funding to be accessible to SME, if innovation from these firms is seen as part of the plan to diversify the economy and suggests that the application processes need to be designed with SME applicants in mind – for at least some of the available funds.

Czarnitzki (2006) also found HVMS start-ups faced a higher cost of capital compared to larger established businesses, and that larger firms preferred using internal funds to support R&D. As an HVMS start-up is likely to be an innovation-based business facing financial constraints on its R&D, and yet is the very type of business likely to lead to diversification of an economy, it is logical that supporting these firms is important.

The increasing significance of SME in the EU economy is contrasted with their low participation in R&D funding mechanisms. Gilmore, Galbraith & Mulvenna (2013) call for such mechanisms to be made more SME friendly by addressing the barriers to their participation.

The USA supports SME R&D efforts through strategies such as the SME innovation research and technology transfer programmes through the Department of Defense, and federal acquisition programmes which

require SME to have a 'fair share' of federal business (Foster, 2004). An example is the Small Business Industry Research Programme [SBIR] which requires 2.5% of all federal procurement to go to SME (Goran Roos, personal communication, April 10, 2013).

The published research does not have a HVMS SME focus although these businesses are increasingly important in all economies for their contribution to employment, and are seen as a rich source of innovation (Gilmore, Galbraith & Mulvenna, 2013; Sandu, 2010). Both of these factors suggest that SME are going to be a key player in any NIS, and yet they are apparently not being given a voice through research.

The consistent lack of research into the views of the users of the R&D funding systems around the world is surprising, as most of the macro level research is aimed at improving the outcomes from the systems. It would be fruitful to ask the users of the system where they see the problems and opportunities for improvement.

The co-funding opportunities offered by the NIS could be a key enabler of HVMS SME. The aim of this research is to uncover and address any issues facing HVMS SME in accessing these opportunities.

theory development of those propositions (phase two is in development for late 2015).

Respondents were found by accessing the government *Who got funded?* online database (Ministry of Business, Innovation & Employment, 2012). The database declares details about the businesses that received funding, as well as purpose, amount and date. Businesses that had received funding from 2010 to 2012 were sorted to identify those fitting the HVMS SME group following the Martin Jenkins report (Martin, Jenkins & Associates, 2012). Several large businesses were also included as the data showed a considerable amount of funding went to businesses that are not SME. Furthermore the larger business experience of resourcing an application could provide an informative contrast to the SME perceptions of the difficulty of completing an application (if this was, as the anecdotes suggested, an issue).

A list was completed, and the businesses in two regions (Auckland and Wellington) were asked to participate in the research. There was caution on the part of the businesses who had received funds, as many were concerned that any future applications may be at risk if their identity was known.

After assurance that the identities of respondents

Industry	Number	Size range (employee count)
Pharmaceuticals	2	3 - 300
Software	3	5 - 80
Hi tech manufacturing	3	7- 25
Engineering	3	5 - 40
Niche manufacturing	2	1 - 10
Electronics	1	4

Table 1.

Survey respondents (successful co-funding applicants) by business type and size.

For analysis, the largest forms in each of these categories was not included in SME counts, having employee numbers above 19 people. The sample for this research therefore comprises 11 SME and three larger businesses.

Method

The method was comprised of the research question, *What is the experience of HVMS SME when applying for government R&D co-funding?* and a series of semi-structured interviews with businesses identified as fitting our HVMS interest group. This approach was seen as the first part of a two-stage project which would develop propositions for testing across a much larger sample with a quantitative survey in phase two, following a grounded

would not be released, we arranged interviews with a varied sample of businesses as shown in table one.

There are two limitations to the sample as it only includes successful funding applicants (it was not possible to trace unsuccessful applicants), and the funds were awarded under the previous agency (MSI), so the results do not directly apply to the new situation with Callaghan Innovation, except as *lessons learnt*.

This is an important distinction as the funding arrangements were going through substantial changes during our interviewing period with the establishment of Callaghan Innovation which effectively replaces the agencies featured in this research (Raine, Teicher & O'Reilly, 2011), and recombines many of the funding opportunities for HVMS SME into new products (Joyce, 2013).

Interviews were conducted with the person responsible for the application at the time, or the CEO of the business. Interviews were recorded, transcribed and then analysed using thematic analysis. All interviewees had received at least one round of funding, and we asked each to describe the process of applying for funds. When needed, we prompted interviewees for factual information by asking questions such as, *How long did it take to get the information?* and *How long did it take from initial contact to receiving funds?* For the most part little prompting was required and the conversation flowed to cover many areas of their relationship with the agencies they dealt with, and the overall funding ecosystem.

The current sample is biased as all participants have received funding, and could be expected to be happier with the process than a sample of unsuccessful applicants. It is also potentially biased since we interviewed only those who agreed to take part, and it's possible that those with strong views, either positive or negative, would be more likely to participate.

As the interviews progressed it became clear that the views of several groups were important to the discussion. These groups included independent consultants advising applicants, regional funding coordinators (staff from regional bodies such as ATEED, Grow Wellington, Canterbury Development Corporation), and other players in the funding industry such as venture capital firms, and investment angels.

Following a "snowball sampling method" (Bryman & Bell, 2011, p. 192) we expanded the range of respondents to include the wider industry as shown in table two. This created problems for the researchers in maintaining focus on the original question in a context which was changing almost daily as we worked.

From this sampling over a period of seven months we had 28 interviews which covered many perspectives

Organisation	Number of respondents
Regional cofunding agency staff	5
Independent funding contractors	2
Venture capital industry spokesperson	1
Strategic investment partners/advisors	3
Callaghan Innovation staff	3

Table 2.
Expanded range of respondents (innovation funding ecosystem) by organisation

on the innovation funding system in New Zealand, with the majority focused on the business applicants' perspectives. These interviews were analysed along with documents on funding policy, Callaghan Innovation establishment documents, and other completed research. The documents were taken from government and non-government sources.

A draft report was circulated in June 2014 to respondents and other interested parties and received generally positive feedback. Minor alterations were made to the report in response to the feedback received. The final report (July 2014) was then sent to Callaghan Innovation Ltd and MBIE, and discussions are continuing. This paper is based on that report (Kearns & Beale, n.d.).

Results

The results presented below are mainly taken from the interviews with applicants (see table one), regional funding partners, and independent contractors (see table two). Other interviews were useful in providing context, but did not focus directly on the research question, and so are excluded from this analysis.

The presentation of results begins with the co-funding application process from the perspectives of the applicants and funding agencies. These are followed by views of the consultants who are contracted to applicants to help complete applications.

Co-funding application process:

Applicant views

A significant number of the SMEs we interviewed found

that the process was frustrating, and too time consuming. The time taken to complete an application varied from a minimum of 1-2 weeks. Elapsed time (while waiting for approval) was often several months. The R&D Manager of a large pharmaceutical company said, "The time taken to collate the information was from 40 hours up to several weeks", while the CFO of a large software company said, "Just one month working, maybe 10 hours each week". The CEO of a small engineering company said:

There was probably, in real terms maybe 60 or 80 hours to put one together. I think X worked on his for about a week, so that was 40 hours, but...on the second time around I guess we'd cut, and paste, and pull out of previous applications (CEO, small engineering).

All applicants accepted that it was reasonable to provide information to justify funding, but some smaller organisations found the process not one that they wish to repeat, stating "It's a valuable exercise, but... the smaller companies and how I've seen it go through can be intimidating" (CEO of small pharmaceutical company). Similarly the CEO of a medium sized hi tech manufacturing company commented that "It is quite difficult, I wouldn't say...it's insurmountable but there is a lot of time involved in it It's not streamlined in any way, shape or form".

Issues raised by applicants included the wide range and (apparently) marginal relevance of some of the information required and they questioned the criteria for the funding decision. Even the CFO of a large software company said, "The questions were very focused on...financial benefits which are the hard numbers...It's...not enough focused on intangible benefits, or on financial such as new IP production and the knowledge gained". The CEO of a small pharmaceutical company also said, "Their investment criteria are all about sales, revenue and profitability. When you're profitable you don't need money, go and fund it yourself".

There were also questions about the level of detail required by the application, with many feeling that the details being asked for were of little value as they involved (for example) extrapolating revenue projections for seven years into the future. While this might be a

useful planning exercise, the applicants felt that they were being asked to commit to forecasts over which they had little control:

You have to extrapolate exactly in terms of what your costs are, how much is going to be done by the mechanical design engineers, how much by the electronic engineers, how much by the electrical engineers...I mean what was more important, the innovative idea was there, the concept, having to do it, rather than allocate it out to the various functions?" (CEO, large engineering).

Most of the smaller SMEs chose to use an external consultant to assist them with applications, and likened this to their use of external legal and accounting advisers:

And when we were looking at this particular thing we didn't have any internal resource really on hand. So we went out to a third party...and he...sat and talked to us, and we gave him some of our stock standard stuff and he pulled it all together over a couple of days and put it in (CEO, small pharmaceuticals).

And other applicants would have used business consultants if they had known about them:

What would be a great benefit is if you had...wanted to have a grant where...there was somebody who could come in, spend a day with you full-time. Assess the business, get all the information they need and make that sort of call (CEO, small engineering).

Some applicants who have been successful in the past will not apply again:

We've got some ideas and technology at the moment that we think might be a winner here, there's no way we're going for a grant on it, it's just too long winded and sort of just too hard, you know (CEO, small engineering).

Many commented on the fact that though they had received funding for product R&D, it was difficult to get

funding from any source for the other activities required to commercialize innovation. The director of a medium sized hi tech manufacturing company commented in this saying, “Industry needs support in the path to commercialization, not just in science and R&D but in the forms of marketing messages, product iterations, response to markets, regulatory needs, etc”. The CEO of a medium sized software company also agreed saying:

I don't think that's a Callaghan issue. I wish they interacted more and did some better value add but...I wouldn't say I wish they would fund the middle chunk. What I do wish is that someone would fund the middle chunk (CEO, medium software).

Co-funding application process: Regional funding advisor views

In assessing applications, agency funding managers told us that businesses with an existing track record with a management team that understands all aspects of the business have the best chance of commercialising innovations. One regional funding advisor said, “It's usually harder to get funding to go into start-ups unless they have a really good team already, like, that has a track record”, while another regional funding advisor commented:

And the other way around, when the project is good on paper but you don't trust the team ... there's no business skills, there's no sales skills or financial skills. And that's an area which is much beyond the scope of just R&D (Regional funding advisor).

The applicant is more likely to succeed if they have the resources they need to benefit from R&D funding:

If you don't have a track record or if you've been paying yourself great dividends or whatever then that's going to...hamper your funding application because either you don't have the money or you've been paying yourself...that can, that can throw a little bit of a spanner into the works (Regional funding advisor).

Agency staff did not accept that the process was too demanding, saying that an applicant that struggled to apply would be unlikely to successfully commercialise the result of the R&D. Thereby if the process was hard for some, it was a good qualifying filter:

The ones that often fail, that I've seen, are the ones who have a great idea and that great idea comes through but R&D is a strategic endeavour in a company and in a small company they often have people who are both operational and strategic...(in a small company)...Every time an operational matter will bang a strategic matter on the head, right? (Regional funding advisor).

The use of consultants to assist firms with applying for funding is generally frowned upon by agencies. One regional funding advisor explained:

It's frowned upon because it's a business that is applying for the R&D funding and it's the business that should take responsibility for putting the application together. Because they know what it is that they're talking about and therefore the quality of the application is getting better. If you're having to deal with an external contact of any sort then you've got to, you've got to ask them, and also to some extent it's pretty much our job as well (Regional funding advisor).

The issue of funding for only product R&D, (and not any other forms of innovation) was widely acknowledged. One regional funding advisor stated, “R&D doesn't look at brand, customer engagement or revenue models or...business networks, or manufacturing processes. But it's really about the product, right, and what's tightly related to product”. Another regional funding advisor stated, “Funding gaps do exist (e.g. for the marketing of a new innovation) but successful businesses should be able to fund these”, while a third funding advisor said:

You can't get the R&D funding if you haven't done some (market) validation, but then the funding you can get from NZTE to go overseas, that's much later in the process. And so I think in the 'in between' there is a gap there (Regional funding advisor).

There was no consistent process for measuring the impact of the funding. It seems to have been usually confined to an audit of whether money was spent on what was intended, rather than assessing the progress of the company towards commercialising the innovation for which the funding had been awarded.

Impact assessment was something that most regional funding partners had heard about, and was often referred to in the context of someone “doing some work on it”. But no-one we spoke to had actually seen anything that resembled a robust process:

There is a condition as part of, I think it's funding application over \$30,000, that Callaghan Innovation and its predecessors can follow up, at various time periods after an application has been completed, to determine the outcomes and where the tracking, but from my investigations and our investigations here that's never actually happened (Regional funding advisor).

The lack of follow up research may be a changing thing however; according to one regional funding advisor, “Until recently there's never been that drive to actually very consciously measure the results of the investments that have been made...now, we are now required to report on...the results of the investments we recommend...”.

There were widely differing views on who deserves funding. Attitudes ranged from questioning the effectiveness of funding businesses that were already successful to questioning the effectiveness of funding small SMEs that lacked business skills. One regional funding advisor's response to these queries is as follows:

You kind of want to back winners, right, so my thought is create winners. And you can't create them out of thin air, there has to be some substance, they are already... And so if they, ... have no team, no financial resources, nothing, well we can't do it for them, or if we could we probably should quit and go and do it (Regional funding advisor).

There were also concerns about the recently introduced (October 2013) sliding scale (30-50%) in project grants for the government portion of the R&D project costs.

The 50/50 rule was nice and clear cut and everybody could rely on it. Now a company gears up for a million dollar project, oh I don't know if I need 600,000 or 700,000. For goodness sake, . . . you go to your bank and you say I need either 600 or 700 and they say what, you don't know, oh well I'm dealing with the government, oh well that's alright then [laughter]. No we don't know what we're doing either with the government. See it's the whole customer service thing is wrong. You've got to give your customers surety (Regional funding advisor).

Funding follow-up and client management (applicants & regional funding partners combined)

We found that the amount and quality of follow-up was generally low. Some applicants did speak in glowing terms of having had a relationship manager who became a coach, trusted adviser, and someone alert to networking opportunities. In one case the funding advisor had been invited onto the board as an independent director for one year. In another instance the CEO of a medium sized software company commented that “the reason he was good ... he provided value way above and beyond the grant ... was a kind of a semi business coach, wanting to get to know the business, what we were doing, was in constant communication”. But serial applicants felt that this type of connection was largely in the past. For example one applicant stated, “Callaghan have become ... just a funding body”. Likewise, the CEO of a large software company had the following to say:

If I now look at our relationship, how it's changed with MSI and Callaghan Innovation, is that our fourth grant was purely about the money. It was all about what needs to be in the report to get the grant, where's the money going, what's your monthly reporting and what you've done with it? And we finished it and we haven't pro-actively heard a word from them since that happened, so it was interesting that the relationship that we now have with them has just become a funding body (CEO, large software).

Similar negative feelings can be viewed in the experiences of two different CEOs, both from small

pharmaceutical companies:

We spent two weeks writing a proposal, we rang X to say, 'yeah we've just got one more question' and he said, 'oh don't bother, the money's all gone'. We said 'what do you mean it's all gone?' and he said, 'they've finished, they just took the first 25 or whatever that turned up and if they seemed like they were okay they just gave them money'. So we spent two weeks getting nothing (CEO, small pharmaceuticals).

You stick those in and they don't even tell you. They come back and say 'you're unsuccessful', they don't tell you why, they don't tell you what the criteria were on which they reached their assessment, all those things (CEO, small pharmaceuticals).

There was variable follow-up from funding agencies on the business impact of the funding. Mostly it was about audit of the expenditure and the progress of the R&D.

We have to submit, with invoices we have to submit progress reports...they're quite detailed, they don't just give you the claim and then give you the money. You submit an invoice, we do it on a monthly basis. But every month we do a breakdown of hours that have been spent as well as the goals that have been achieved against the goals that we set in the initial project (CEO, small engineering).

No-one is coming back from Callaghan saying 'hey ..., you've now had \$X bucks of our money, how's the business going?' You know, to me I don't mind talking about that and then talking about, well hang on guys, who else have you funded? So that was interesting (CEO, large software).

Consultants views

The views of the applicants and agencies concerning the application process are vastly different. Applicants are finding the process time consuming and difficult, and are subsequently using a consultant to help prepare the application. However, the agencies maintain that if the

application is too hard then the business is not ready for funding. The agencies also express strong views about the use of consultants and consider them unnecessary middle men.

The agency staff and the consultants have the same role but on opposite sides of the public/private divide and this shows in their opinions. The agency staff claim the hurdles which the applicant has to cross are a necessary quality filter, and the consultants exert every effort to get their clients application across the line as shown in the quote below:

So I think I provide significant benefit to the process. I would argue that an application written by me is of a very high quality because I know the application criteria intimately. I know what the format should look like. I coach, cajole, coerce the customer to get all the information that's required, and in fact in many cases it's a very intensive process for me, I'm educating the customer about a whole pile of things along the way that they do have to be aware of for ability to succeed both in R&D and commercialisation (Consultant).

Agency staff are concerned that the consultants are not adding value to the client's applications, and simply churning funding revenue. One regional funding advisor states, "The quality of applications that I've seen coming through from consultants that have just been putting applications together are generally of lower quality". There is also concern that consultants merely duplicate the service offered by the agency; "to some extent it's pretty much our job as well. So it's our job" (Regional funding advisor). The quality of the consultant and their work for the client is the key factor here. One notably successful consultant claimed:

So we're talking about small to medium sized business here, but there's large companies that use my services as well. Not only do they use them, they use them again and again. So I have this argument with Callaghan regularly if I provided no value then no one would ever engage me (Consultant).

Discussion

There are four themes that emerge from these interviews as being central to the HVMS SME perspective: 1) the application criteria, 2) the application process, 3) the relationship with regional funding partners, and 4) the role of consultants.

The Application Criteria

Applicants felt the criteria included detailed financial forecasts for up to five years which could not be made with any real confidence, given the time frame and the vagaries of being an SME. It may be that the regional funding partner takes a more relaxed interpretation of these forecasts as being indicative, or aspirational, but applicants thought they were being asked for firm commitments. This was a key feature in the criteria being seen as unreasonable and narrowly focused.

There did not appear to be opportunity for applicants to discuss improved capability which would result from their gaining funding. This, and other similar qualitative measures of success were absent, which seems inconsistent with the focus on 'technical stretch' as a primary eligibility factor.

There was universal concern about the 'path to market'. This is required to be addressed in the R&D application, and clearly is important to both the funding applicant and the regional funding partner to ensure a return on investment. The concern of the HVMS SME is that there is no funding support for commercialisation, which they all maintain is at least as costly and challenging as the technology development that can attract funding. The problem of the 'prototype left on the shelf' through lack of resources to continue down the path to market, may be widespread, and if so, represents a failed policy setting requiring urgent attention.

Applicants were asked to demonstrate a path to market for something they could not yet do (hence technical stretch), which appears to be a focus on short term returns, whereas the medium to long term value of the funding may be much greater in building capability within the firm.

New Zealand Trade and Enterprise [NZTE] is the agency with responsibility for 'path to market' assistance, but the consistent story from HVMS SME was that NZTE

was only interested in firms much larger than themselves, and on the NZTE 'top 500 list'. This is an untested perception, as we did not get comment from NZTE. Whatever the case, there does seem to be a gap between completing successful R&D (as an HVMS SME) and being able to access support for market development from NZTE similar to the 'chasm' Moore (2006) talks about in high technology markets. Assisting small firms who have completed successful R&D to commercialise may unlock greater economic benefit than the existing funding practices.

Applicants were generally unaware of, or confused by, the recent changes to the co-funding products introduced by Callaghan Innovation in late 2013. While this is understandable given the contemporary nature of the changes, the HVMS SME we spoke to could not see any merit in the sliding scale introduced as part of the R&D project grants (which is most relevant to them, as project grants are aimed at first time applicants).

The Application Process

There was a clear division in opinion on the application process with the larger firms finding it manageable, (sometimes putting a three person project team onto an application), and the HVMS SME who did not have the staff capacity, or possibly the skill set to do this. The HVMS SME are thus in a double bind through not having the capacity to complete the application, and also being discouraged from employing a consultant to do it.

There was general concern about the time taken for the funding approval. The typical timeframe was about four months with time lines of up to one year being mentioned. Speed to market is a critical success factor for many of the high technology products that result from R&D (which is often happening in parallel elsewhere), and some degree of urgency is called for from the regional funding partner.

Relationship with Regional Funding Partner

This was highly variable from the perspective of the applicant and it is clear that the incumbent staff vary in inclination, motivation, and approach to their role, all of which affect outcomes. There were some very well regarded individuals, but this was countered by a

perceived lack of continuity as staff changed at the regional funding partner.

Several interviewees expressed surprise that after the rigorous application process, there had been no further contact from the regional funding partner as to outcomes of the project. The general view was that accurate contract administration was the only issue of interest to the regional funding partner once the money was 'out the door'.

This was also a concern, for the majority of the regional funding advisors, who felt that the data was readily available to assess co-funding effectiveness, but that no work was being done on this. They concurred with the view that the aim appears to be get the 'money out the door – job done', and that little, if any monitoring of the research spending was being done, even though the provision for this is in every application.

This appears to reflect a bureaucratic and risk minimising approach from the regional funding partner, in which process is dominating over purpose. The opportunity for informed decisions based on reviewing funding data is being lost, and with it, possible improvements for fine tuning the application processes.

The comment that the regional funding partners appeared to have no concept of customer relationships was put forth forcefully by an articulate minority. The lack of post funding review, could support this opinion as there is no-one from the regional funding partner asking the question 'how are we doing?'

Several businesses expressed the idea that they felt they had 'had a funding advisor' in the past, but that this relationship had been lost with the introduction of Callaghan Innovation. Again this may be a transitional issue which will solve itself in the near future. Subsequent discussion with Callaghan Innovation funding managers did point to a period of strategy development though 2014 – early 2015. This is to be followed by establishing networks of businesses using funding as a tool for encouraging collaboration, and this suggested a move towards proactive relationship building.

During the interviews with regional co-funding advisors we were surprised to find that there is no national forum or meeting of these staff, who are essentially members of the same team, delivering Callaghan Innovation co-funding through regional

agencies. In fact many of them did not even recognise the names of their counterparts in other regions. As there are less than 20 staff nationwide in this team it seemed that strong consistency in policy interpretation, and close communication with regional funding agencies is entirely possible. In a country where collaboration to overcome small scale has been a catch-cry for at least a decade, the leading agency of the NIS could model this behaviour successfully. This would overcome much of the perceived inconsistency issues between regions, and between the regional partner and the central funding agency.

The Role of Consultants

This was the most contentious issue with the applicant businesses seeing consultants as very useful, the regional funding partners seeing them as unnecessary middlemen, and the consultants seeing themselves as the funding experts.

There is definitely a call for some form of assistance to HVMS SME completing applications, as they clearly find it difficult, and even (some) successful applicants are not keen to repeat the experience. The institutional response was commonly 'if they can't do it, they are not ready for funding', but this does not consider resourcing issues, or the fact that complex application forms are not the usual order of business for HVMS SME CEOs.

The competing demands on staff time and effort, plus the nature of the task argue strongly for seeking expert advice on this, which is the natural role of consultants. Some of the regional funding partners claimed that they should be seen as filling this role, but it was clear that the applicants perceived these staff as belonging to the government rather than being on their (applicant) side of the table. As such, the degree of interaction and trust was somewhat circumspect.

The regional funding advisors expressed the view that contractors are making good applications from poor applicants, and this was a central argument against contractor involvement. It is probable that the private contractors are incentivised to work with only those who they perceive as likely to succeed in order to protect their reputation, and this counters the regional funding partner view to some degree. If consultants are in the business of picking winners to work with, then it makes no sense for

them to pick weak candidates. The consultants made valid points about their ability to qualify an applicant early, being more finely tuned than the regional funding advisors, as their ongoing livelihood depended on having a track record of success.

Even if contractors were leading (as opposed to supporting) the applicant, the business in question would be receiving valuable professional development by being coached through the application, and the overall objective of business development is still served, although less directly.

A further point made by contractors was that they engage in a 'deep dive' to fully understand the business when helping with the application. This time commitment is only possible on a consultant-client basis, and the regional funding partners could not have the same level of involvement.

It is probable that the views of consultants and regional funding partners have merit, in that there are poorly performing consultants who compound problems in the system, and that there are high performing consultants who provide useful input to the R&D co-funding process. Such consultants possibly outperform regional funding partners in service delivery.

Conclusion

This research was an exploration of the perspectives of R&D co-funding applicants on the application process, undertaken during a time of rapid change in the institutional arrangements for this. The need for it was clear as the existing literature has very little empirical research into how the co-funding processes are actually working, at the level of the applicant and application process.

It is clear that the application process serves two purposes. One is to provide the regional funding partner with enough information to make a decision and the other is to force the applicant through some disciplined thinking to further develop their proposal. All parties agreed with the need for thorough processes when risking taxpayers' money, but the way to achieve this was not agreed upon, with the use of contractors to help with the application being the main stumbling block.

The application criteria do not reflect the reality

of HVMS SME using the funding to develop business capability as well as a prototype. The focus of the R&D co-funding on product based innovation is a significant constraint on innovation, especially given the claim that many prototypes do not make it to market through lack of resources once the R&D funding is used.

The outcomes of the R&D co-funding process are not being tracked closely enough to allow informed fine tuning. This appears to be a significant problem and one that could easily be solved as the data is available in the agency records of past applications, and in the outcomes for each business, recorded in their annual accounts. Although there always has been a process for this to happen, it has not occurred.

The NIS is still developing. The parts are being positioned, but are not yet working in a connected fashion from the perspective of the HVMS SME. There has been considerable effort in designing the NIS and implementing the structures, such as Callaghan Innovation and New Zealand Venture Investment Fund. Now it is time to look at efficiencies of agency interaction and the support of businesses.

Priorities from this point are:

1. Begin analysing outcomes of R&D co-funding from the existing database of previous years.
2. Take the findings from this into consideration when considering policy settings for Callaghan Innovation co-funding processes with their regional funding partners.
3. Ensure consistent interpretation of policy by regional funding partners nationwide.
4. Reconsider the usefulness of contractors in co-funding applications.

Future Research

A weakness of this work is the lack of coverage of unsuccessful applicants. Their story may be critical to establishing whether these businesses are HVMS SMEs which are failed by the NIS, or whether NIS is getting it right by not co-funding their activity.

It would also be useful to update the research after the new funding regime under Callaghan Innovation is fully operational sometime after 2015.

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