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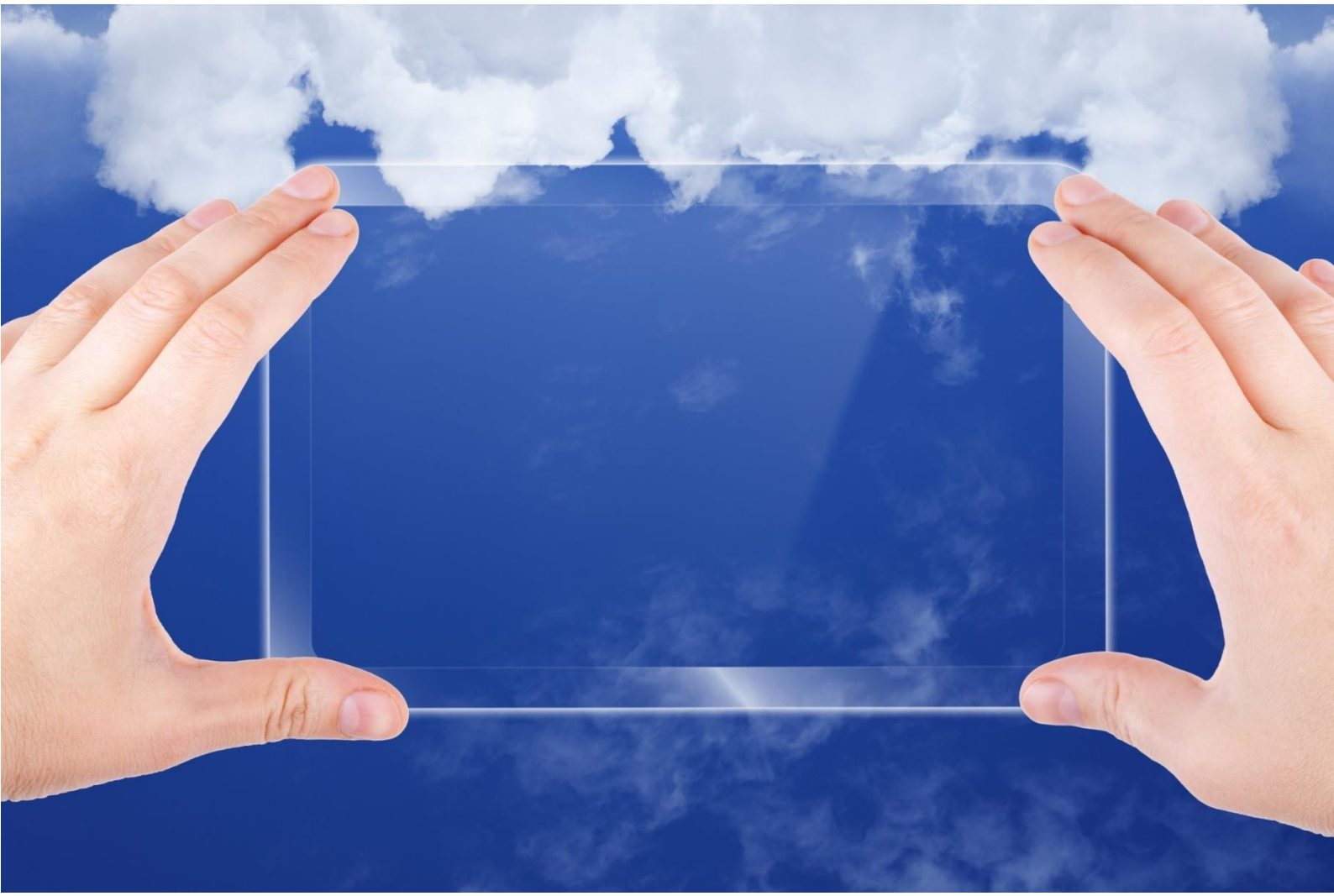

New Zealand services firms' approach to international revenue

A case study of the Cloud-computing sector

NZIER report to The Treasury

7 August 2017

About NZIER

NZIER is a specialist consulting firm that uses applied economic research and analysis to provide a wide range of strategic advice to clients in the public and private sectors, throughout New Zealand and Australia, and further afield.

NZIER is also known for its long-established Quarterly Survey of Business Opinion and Quarterly Predictions.

Our aim is to be the premier centre of applied economic research in New Zealand. We pride ourselves on our reputation for independence and delivering quality analysis in the right form, and at the right time, for our clients. We ensure quality through teamwork on individual projects, critical review at internal seminars, and by peer review at various stages through a project by a senior staff member otherwise not involved in the project.

Each year NZIER devotes resources to undertake and make freely available economic research and thinking aimed at promoting a better understanding of New Zealand's important economic challenges.

NZIER was established in 1958.

Authorship

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The assistance of James Messent (Treasury), Andrew Gentle (NZTE), and Sarah Spring is gratefully acknowledged.

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Key points

We interviewed 12 Cloud-based Kiwi firms to get a better understanding of their business models

- New Zealand firms, like those in many economies, are increasingly engaged in activities that are supported by Cloud platforms.
- Little research has been carried out to date on these firms' strategies and how they might be supported by policy makers.
- Our research objectives were to develop a qualitative evidence base around how Cloud-based firms in New Zealand operate and consider what role government might play in supporting their growth in international markets.

The firms we interviewed share several common features

Traditional New Zealand export challenges were not major problems

- New Zealand firms can and do use Cloud platforms to overcome the problems of scale, distance and thin markets. Cloud platforms offer instant, inexpensive scalability, international reach and reduce the need to invest in infrastructure to an insignificant level.
- Many New Zealand Cloud businesses are 'born international' rather than taking the traditional Kiwi exporter approach of building domestic scale before expanding offshore. Therefore, they have different needs to goods exporters when it comes to government support.

Their aim was niche market dominance through developing imperfectly imitable capability, not growing market share

- The firms have successfully secured sustainable international revenues over a Cloud platform by deploying a focus strategy aimed at capturing **all** of a particular specialist or niche market.
- They did not seek to follow the less reliable and sustainable strategy of capturing share within a market.
- The literature suggests the best approach to execute these focus strategies is to build a value proposition based on imperfectly imitable capability – technologies, intellectual property, human resource or relationship-based capital that a competitor could only copy with difficulty.
- New Zealand firms don't need the most highly skilled software engineers to do this. In fact, the skills required are not rare or especially valuable, but are readily available from the market.

They don't seek to move up the value chain: there *is* no value chain

- The firms studied saw their commercial environment as a value network (or ecosystem) rather than a linear value chain.
- These firms seek to add value by continually enhancing their core value proposition, whether by adding more imperfectly imitable capability or by adding free goods and free services to the value proposition.

Their Cloud-based business models expose them to different risks and challenges than more traditional models

- A few entrepreneurs in this study built a value proposition and then tried to find customers. This establishment model is sub-optimal, relative to what the literature suggests is best-practice for building and growing revenue.
- The literature generally finds that starting from an understanding of the value dynamics in the target market (i.e. understanding what the customer values most highly) and then building imperfectly imitable capability to provide this value is a less risky strategy.
- Generational differences can be a barrier to purchase. Most users accustomed to Cloud services and products are in their twenties and thirties, but those with purchasing power are usually older, and often rate the risks associated with Cloud more highly than the benefits.
- The firms we interviewed are vulnerable to types of strategic behaviour from competitors which are specific to the online business environment. Examples are value appropriation, strategically withheld cooperation and lock-in.

Cloud-based firms are not reliant on government actions, but policy makers can still play an important role in facilitating their growth

- The firms we interviewed valued their interactions with agencies such as Callaghan Innovation and NZTE early in their development. Continuing to build management, governance and strategic capability through the incubator network in New Zealand seems to us to be a sensible approach to supporting the emergence of new Cloud-based entities.
- Now the firms we spoke to are well-established, their reliance on government is more limited. However, we suggest policy makers could support established New Zealand Cloud firms by:
  - working with overseas governments to agree a principled structure for the negotiations in which abuses of online strategic behaviour are addressed
  - supporting more customer-centric (and hence more commercially sustainable) alternatives to the currently dominant *develop → commercialise → sell pathway* supported by the current innovation system
  - working with overseas governments to ensure that market access by New Zealand firms is not compromised by protectionist measures or practices which harm the end-user experience of customers of New Zealand firms

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1. Introduction

1.1. Objective: lift understanding about how Kiwi Cloud-based firms operate

Treasury and New Zealand Trade and Enterprise (NZTE) asked NZIER to conduct research which investigated how New Zealand Cloud-based companies thought about securing international revenues. In particular Treasury and NZTE were interested in finding out how current practice in market compared to established frameworks such as Global Value Chain (GVC) or Global Value Network (GVN) frameworks, so the research needed to consider the whole delivery chain: products, services, customers and suppliers.

The roles of these frameworks in firms' strategic planning was a key area of interest. Did either framework shape their thinking about how they participate in their networks?

Much recent New Zealand work in value capture has been structured around the idea of moving up a value chain. The usefulness of this idea is very apparent in primary production, but could it be applied to Cloud-based technology industries?

If it can't, how do these firms think of value-add, and how might they go about increasing it?

More generally we were interested in understanding how a wide selection of New Zealand Cloud-based firms addressed offshore business opportunities, and what the challenges or advantages of doing so from New Zealand might be.

Our overarching ambition was to deliver insights that would increase the understanding of the Cloud-based environment among policy makers so that they would be better placed to support this emerging sector.

1.2. Why does this matter?

The ICT sector made up 6.2% of GDP and employed about 55,000 people in 2015. ICT exports were $1.7b in 2014 (NZIER, 2016).

Table 1 Contribution of the ICT sector

2015 estimates except exports (2014 actual)

Contribution to	Value ($b)	Share
GDP	$12.5	6.2%
Industry output	$23.5	5.9%
Exports	$1.7	2.5%
Employment	54,750	

Source: NZIER (2016)

Cloud exports are weightless, and the distance the service travelled to the end-user is not a matter of much concern in cyberspace. They provide an opportunity for New Zealand firms to overcome the traditional challenges of scale and distance that often hold goods exporters back.

While it is a growing sector with a significant impact on the economy, it is a relatively new sector. New Zealand's traditional export commodities (Dairy, Meat) have been the focus of policy for decades and the experience of the government in supporting their development is much more extensive than for the ICT or Cloud sector.

Therefore, there is a body of understanding that needs to be built up in how the government can provide support to these new and growing sectors. This research contributes to this critical body of research by strengthening our understanding of the approach that Cloud firms take to compete internationally.

1.3. Cloud anonymity

Figure 1 Cloud anonymity

Source: New Yorker

On the internet, nobody knows you're a Kiwi either, unless you chose to tell them. Important Cloud businesses have arisen from locations that would have been considered non-traditional and unlikely a decade ago. Skype from Estonia and Spotify from Sweden are well-known examples, and we have a home-grown hero in Xero.

Examples such as these challenge the assumption that Silicon Valley is the natural sole source of all important digital developments. It is noteworthy that all three companies – Skype, Spotify, and Xero – are Cloud native companies, early exploiters of the possibilities offered by Cloud.

The view that Cloud has now come of age was universally expressed among our interviewees. If this is so, could New Zealand become a major participant in the Cloud economy? We have every incentive to do so, given the challenges of scale, distance and thin domestic markets we face in delivering physical product to the world. How many Kiwi Spotifys and Skypes could take their place alongside Xero in the international Cloud economy? And what role could government take in facilitating this growth?

1.4. Method

We addressed these questions by conducting in-depth, structured interviews with a representative selection of companies including both Software as a Service (SaaS) and Platform as a Service (PaaS) firms. We ruled out Infrastructure as a Service (IaaS) firms, as Treasury and NZTE were chiefly interested in how New Zealand firms might use Cloud infrastructure provided by others to expand their reach into international markets.

In constructing our sample, we sought firms that exhibited as wide a range of characteristics as possible. New entrants and old timers, high-growth and low-growth firms all found a place in our sample. We have set out a comparison of the main features of the firms in the next section.

The interviews were conducted under the condition of anonymity. We are very grateful to the firms that participated for the frankness with which they shared their strategic thinking and knowledge of the forces active in their markets with us.

We did not expose the frameworks to the firms prior to the interview.

In ten of the twelve cases, the interviews were conducted with the Chief Executive officer of the firm. In the other two cases, the interviewee was the Strategic Planning Manager and the Head of Marketing. Both reported to the Chief Executive.

1.5. Limitations

This is a descriptive study which rests upon information self-reported by the participants. We have not validated this information against publicly available information, or information held by the firms themselves, such as accounts or contracts.

This sets the context within which this study should be read: information volunteered by the firms against frameworks which were not exposed to them prior to interview.

2. The firms studied

2.1. The characteristics we sought

NZIER identified a set of service firms with significant revenues from overseas customers or potential to internationalise in the short term representing a range of Cloud-computing services.

The sample comprised 6 SaaS and 6 PaaS firms[1]. We decided not to include IaaS in the sample as there are few such firms operating from New Zealand and the objective of the study was to identify the ways in which New Zealand-based firms use Cloud infrastructure to secure international revenues. However, we did in fact find one firm among the PaaS firms which deployed its own infrastructure and offered IaaS services to the market.

We also sought to include small, medium and large firms within the sample, using the following current annual revenue ranges:

- Small – <$5 million
- Medium – $5 million to $20 million
- Large – >$ 20 million.

Almost all the firms we identified do not make this information available to the public, so we had to make revenue estimates before visiting the firms. Companies D and J were larger than our initial estimates, and Company L smaller, but growing so quickly that it should cross the boundary into the large category within a year.

We also sought to include a 50/50 split between firms that were relatively new to market and established firms, selecting 7 years (arbitrarily) as the break point.

[1] **Infrastructure as a Service (IaaS)** allows the customer access to virtual infrastructure that mimics physical hardware such as servers and network equipment, but which can be created, removed or rescaled within moments. Amazon Web Services is a well-known example of IAAS.

Platform as a Service (PaaS) operates at a level above computing hardware, whether physical or virtual. PaaS allows customers to manage services such as file storage, web servers or databases without having to directly manage services elements such as how much space a database needs, whether the data must be protected by making a copy between 3 servers, or distributing the workload across servers that can be spread throughout the world.

Software as a Service (SaaS) provides software for end-users such as email, word processing, or a business CRM, accessed through a browser. Microsoft Office 365 is a well-known SaaS offering.

2.2. The characteristics we found

Table 2 Firm characteristics

* Bracketed figure indicates years current business model has been in force

Company	Main activity	Years active *	Revenue ($M)	Growth Rate	International %	Sales model	Moving to indirect
A	Regulatory Compliance	6	1.3	300%	15%	Direct	Y (coat-tail)
B	Gas stations point of sale	47 (12)	22	400%	20%	Direct	
C	Marketing for SME retailers	3	0.75	200%	90%	Direct	Y (exit)
D	Education platform	8	27	10%	77%	Direct	y (partners)
E	Open Source Enterprise Solutions	25	17.5	-15%	95%	Direct	
F	Transmedia	10	1.9	10%	10%	Direct	Y (exit)
G	Translation	17 (7)	20	80%	90%	Direct	
H	Metadata management	9(3)	1	50%	98%	Direct/Indirect	Y (exit)
I	Corporate Travel	21	13.5	30%	90%	Direct	Y (partners)
J	Point of sale	7	23	50%	90%	Direct/Indirect	
K	Accountancy	7	274	33%	78%	Direct	
L	Movie data analytics	7	11	100%	95%	Direct	

Source: NZIER

2.2.1. General comments

The 'years active' column shows that several of the firms in the sample have pivoted from their initial business model to a new one once the initial one proved unsuccessful or had outlived its usefulness. Company E is responding to several years of decline by refining its existing value proposition rather than executing a pivot. Fuller details of the pivots are given below.

The growth rates are self-reported revenue current growth rates.

Companies A and F are the only ones whose international revenues are lower than their national revenues. Company A was the only firm that was content with this: all the others, including Company F, saw international markets as offering more opportunity than thin domestic markets.

We explored the sales models used by the firms very thoroughly in the interviews. All but two employ a direct sales model[2], but half the sample are planning to move to an indirect sales model if possible.

Three of these firms are seeking to do this through a trade sale which will require the exit of the current owners. Two others are seeking partners willing to combine value propositions through bundling, and Company A is seeking to ride on the coat-tails of a large organisation prepared to include Company A's product on its service stack.

Companies F and G are Māori led. Company J is Samoan led.

2.3. Comments on individual firms

Company A manages the regulatory compliance risk faced by companies. Initially it targeted environmental compliance, but found only one customer, an Australian mining company. It then retrenched to New Zealand and pivoted to Health and Safety compliance and found a ready market among New Zealand companies seeking to implement the legislative changes introduced in 2014.

Company A pursues what might be called a 'relaxed' internationalisation strategy. It is seeking to expand into Singapore and then Australia, but its current priority is to build and consolidate its business in New Zealand.

Company B was founded in 1970 as an equipment manufacturer in regional New Zealand. In the mid-2000s it was taken over by a digital technology entrepreneur who integrated a digital point of sale system into the equipment, and it is this integrated offering which forms its value proposition today. Its customers are major oil companies and its current growth vector is the United States, where regulatory changes affecting credit card processing are creating an opportunity to win sustained market share that Company B is well placed to capture.

Company C provides SMEs with the ability to mount small, very flexible, highly localised and highly specific advertising campaigns. For example, a bar might use

[2] Under a **direct sales** model the sales transactions take place between the selling company and its customer, without the involvement of an intermediary. Under an **indirect sales** model a third party, such as an agent of affiliate, sells on behalf of the company that produces the goods or services.

Company C's platform to offer a flash happy hour to workers on the odd-numbered floors of a particular building at very short notice.

Company D's value proposition is centred on services, but it is unique among the sample in also deploying and managing network hardware, and offering IaaS to the market.

Company E is interesting in that it is going through a turnaround, and offers a cautionary tale illustrating the possible dangers of relying on partnership for growth. Its revenue, currently $17.5 million, peaked at $22.5 million three years ago. The main reason for this decline is the loss of Company E's largest customer, a large British multinational. The multinational had been Company E's anchor customer throughout its establishment phase, and Company E's growth and sustained presence in the market for more than two decades is largely attributable to its close relationship with the multinational.

Company E's management believes that its value proposition remains attractive to its market and is taking steps to enhance this rather than pivot to another. The steps it is taking include taking advantage of recent advances in machine learning and artificial intelligence to automate more of the value proposition and redesigning the GUI (graphical user interface) so that the user can control more of the process.

Company F's core offering is transmedia. Transmedia, sometimes called multiplatform storytelling, integrates and makes interactive all media – sounds, pictures, texts, animation – across all platforms and devices. Company F's CEO described it more simply as "lots of ways to have pictures and sounds".

Use of transmedia is increasing in many sectors including gaming, film post-production, education and training and e-books. It is also interesting to note that Company F has reduced the building of apps to a standardised templated exercise, rapidly executed. This enables it to focus on the interactive transmedia which is the core of its value proposition.

Company G is a successful online translation company. It has received several tranches of venture capital funding and has been acquiring competitor businesses in recent years.

Company H offers metadata management and related analytics to government clients in Australia, Singapore, and, to a lesser degree (2% of revenue) New Zealand. It deploys both a direct and indirect sales model, having partnered with a New Zealand systems integrator to create a data search, organise and populate solution.

Company I enables corporates to control and realise savings from their travel and related expenditure. It is very well established and, having effectively cornered its niche, the international corporate travel sector, is expanding its offering to SMEs.

Company J offers digital point of sale systems for retailers that can be run on any device. They have secured a strong market position across Asia, and the US is now showing strong growth. They have customers in 170 countries. Their product is bundled value propositions offered by systems integrators and distributors, but most of their sales are direct.

Company K offers a comprehensive online accountancy and book-keeping solution which it is expanding by allowing others to innovate on its platform. It sees its strategic imperative as first mover advantage, and strives to be ahead of the market at all times.

It is one of four companies in the sample to have built scale in New Zealand before going international (the others are A, B and D). New Zealand revenues are still 22% of overall revenues.

Company L specialises in data analytics for the film and advertising industries. They can connect every film to the optimum audience and can implement their solution for a new client with two weeks.

3. Key questions and frameworks

The questions posed in the study fall into three broad categories.

1. Questions about the firm's **strategy**. How does it go about **participating** in international markets?
2. Questions about the firm's understanding of **value**. How does it think about extracting value from international markets?
3. Questions about **competition.** How does the firm compete successfully against rivals?

To investigate these questions, we used frameworks drawn from the strategic management literature of recent decades: the period of the digital revolution. These frameworks are used by international technology companies and the academics who study them, and we have previously used them in an in-depth study of three large, internationally successful New Zealand technology firms (NZIER, 2015). Our finding from the previous study was that the frameworks had great explanatory power: they both described the realities of engaging international technology business, but indicated ways in which current strategies could be improved.

3.1. Strategy and participation

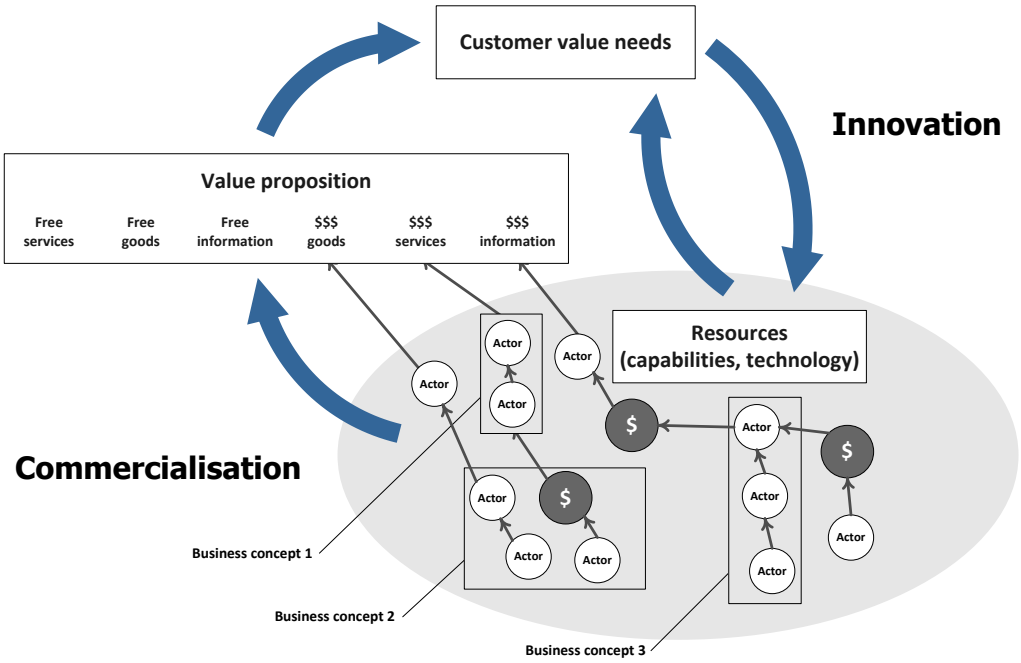
We used the interviews to explore how the firms thought about products, customers and suppliers, and what this implied for their strategic direction, their plans for the future, and the challenges they face. Several of the firms in the sample had impressive growth rates, so we explored the underlying growth drivers in some detail.

As we hope that this study will be of use to policy makers, we investigated the role government plays in the life of these firms. We asked about the firms' past or current engagement with government, and whether it intended to engage with government in the future. In particular, we asked about the role the New Zealand government played in taking the business international, and whether any regulatory barriers were imposed by foreign or New Zealand governments.

3.2. Value

All businesses seek to capture value from the markets in which they participate. In NZIER's previous study, our field of investigation was the not the company or even the industry but the value-creating system itself, within which different economic actors – suppliers, business partners, allies, consumers – work together to co-produce value (Normann and Ramirez, 1993). This is illustrated in Figure 2.

Figure 2 The value cycle



Source: NZIER

In this study, we have concentrated on the elements within the value propositions of firms.

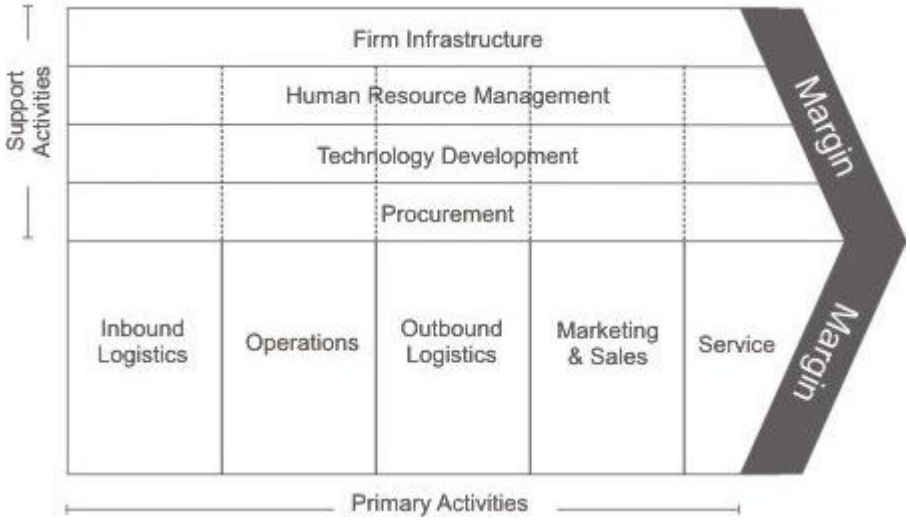
Not every element in a value proposition is monetised, that is, the customer does not pay directly for each element they consume, so we classify the elements of value propositions into paid products, services, and information and free products, services, and information.

Analysing the value proposition in this way has allowed us to explore the firms' own understanding of the environment in which they operate. In particular, we sought to understand whether the firms conceived this as more akin to a value chain or a value network.

Value networks differ from value chains in that there are more actors carrying out a broader variety of functions in a value network than in a value chain, where producer-distributor-consumer relationships predominate.

In a value chain, value is accumulated through successive links in the chain – each producer consumes and adds value to the output produced at the previous link of the chain, until the final end-user is reached.

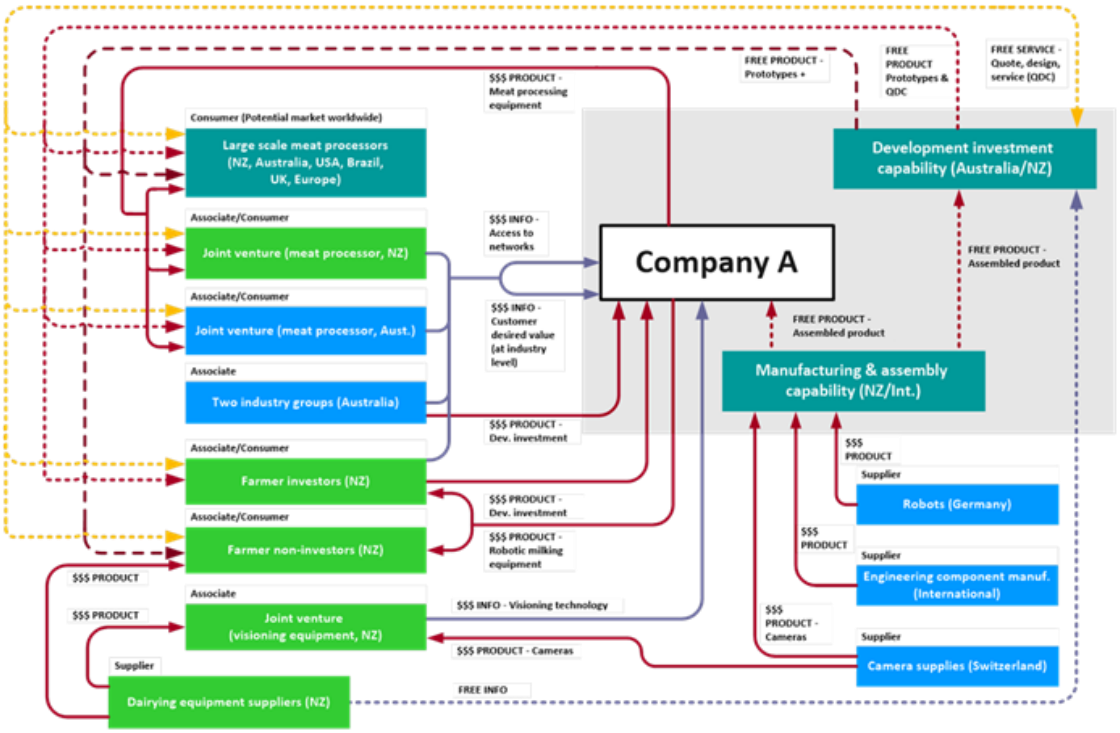
Figure 3 Value chain framework



Source: Porter (1985)

In a value network, value creation is less transactional, and co-creation of value through partnership or collaboration is more typical.

Figure 4 Value network map example



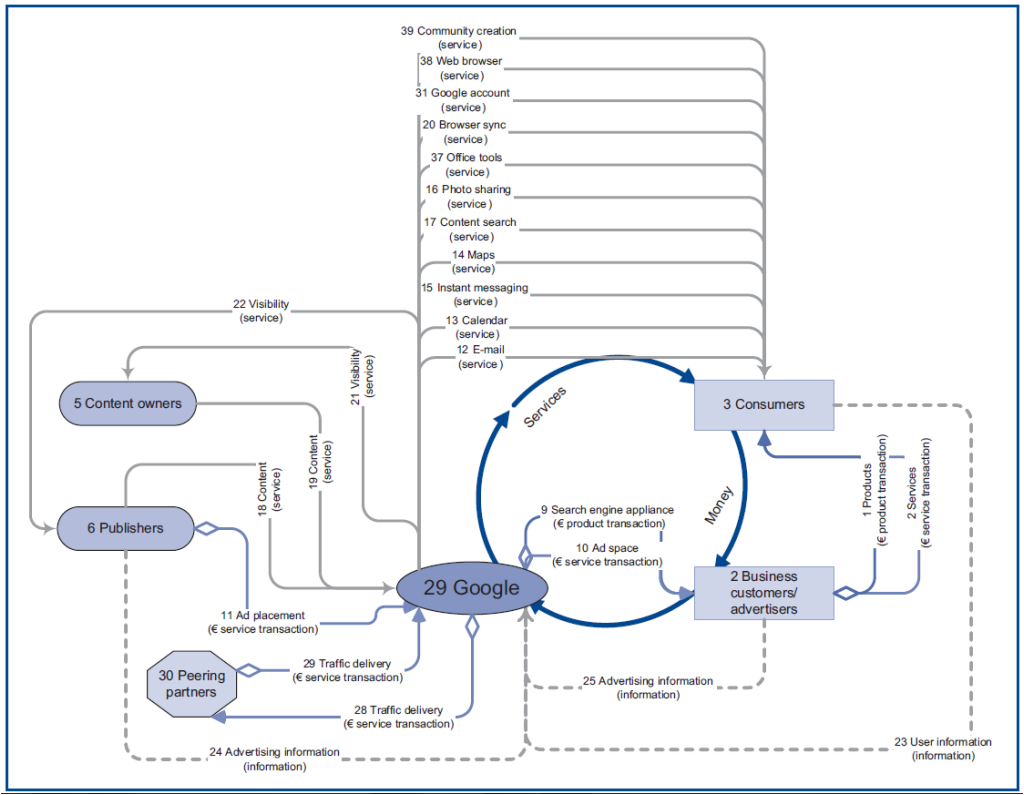
Source: NZIER (2015)

In this study, we investigated how the firms understood their own position within the commercial environment in which they operated. Is this environment more akin to a

value chain or a value network? If it is a chain, is 'moving up the value chain' a relevant concept; if not, is there some other construct that captures how firms think about value-add?

Finally, we note that Value Network Analysis is increasingly internationally to examine how digital firms, who often to do not have a physical product or a traditional time-billed professional service to offer the market, sustain themselves is a complex ecosystem in which the end-user experience is not created by one actor. The *locus classicus* is Pynnönen's influential 2008 study *Customer Driven Business Model – Connecting Customer Value to Firm Resources in ICT Value Networks.* This study contains the following Value Network map of Google as it then was. Here we observe many of the same features as the New Zealand example in Figure 5: the distinction between non-monetised and monetised value streams (indicated with a € in Figure 5), the different actors within the network, and classification of values streams into products, services and information.

Figure 5 Value network map: Google



Source: Pynnönen, 2008

3.3. Competition

This study uses the resource-based view (RBV) of the firm to examine the case study companies. We have adopted this approach as the RBV starts from the assumption that it is the resources at the firm's disposal which determine its sustainable competitive advantage.

Rumelt (1984) gives a useful working definition of the firm under the RBV view. According to Rumelt a firm is:

> *"a bundle of unique resources and relationships. The task of general management is to adjust and renew these resources and relationships as time, competition and change erode their value."*

In this study, we have adopted the framework developed for the ICT sector by Mikko Pynnönen in a series of publications (Pynnönen 2008). Pynnönen classifies the resources of ICT firms into seven categories, which he terms capabilities:

- Software development capabilities
- Service capabilities
- Technological capabilities (including manufacturing capability)
- Information
- ICT systems and technologies
- Immaterial assets[3]
- Contracts and partnerships.

The firm enjoys a competitive advantage to the extent that its resources or capabilities cannot easily be substituted for by other market participants. Each firm has a unique resource profile; if they did not, there would be no relative competitive advantage.[4]

In this study, we asked the participating firms to identify their key capabilities (and therefore, their resources) according to categories listed above. We then asked them to rate the capability according to the dynamic capability taxonomy proposed by Barney (1991), which is useful for assessing the potential within capabilities for creating sustainable competitive advantage. Again, this framework is widely used internationally, indeed it has become a staple on MBA courses. Barney's[5] four categories are shown in Table 3.

[3] Immaterial assets are often called intangible assets in the literature. We have followed Pynnönen's definition as the term intangible assets has been used to cover a very wide field of reference, from all capabilities to clusters of capabilities such as software development capabilities combined with ICT systems. Pynnönen's definition is the most narrowly focused, and we have adopted it in this study.

[4] Bowman and Ambrosnin (2000) found that firms with similar resources produce identical products and tend towards perfect competition.

[5] Barney and Hesterley later (2010) replaced the N (Non-substitutable) capability with O (Organised to capture value). Adopting this revision would introduce a tautology into our analysis, so we stick with VRIN in this study.

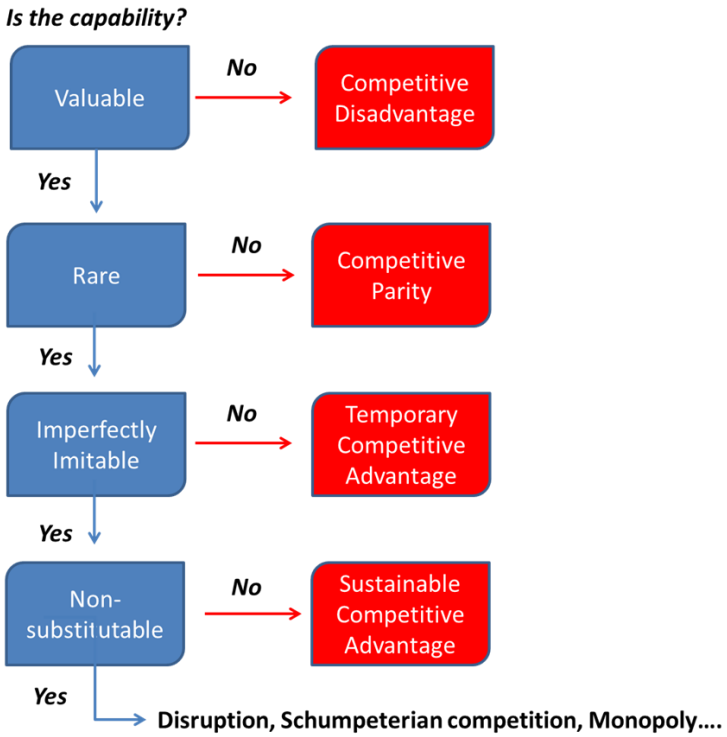
Table 3 VRIN capabilities

Capability (VRIN)	Description
Valuable (V)	Corrects for an internal weakness or confers ability to outperform rivals.
Rare (R)	Access to the capability is restricted.
Imperfectly imitable (I)	Competitors are not able to replicate the capability easily. Very often imperfectly imitable capabilities derive from information asymmetries within the network. Knowledge- or relationship-based resources are often imperfectly imitable.
Non-substitutable (N)	No other capability is capable of a strategically equivalent outcome. The goose that lays the golden eggs.

Source: NZIER

The VRIN characteristics determine the firm's competitive position within the network as follows.

Figure 6 VRIN characteristics



Source: NZIER

The capabilities are cumulative in nature: the potential for sustainable competitive advantage increases as one progresses from valuable to non-substitutable. If the fortunate possessors of non-substitutable capabilities can align these capabilities to customer-desired value they have the potential to introduce disruptive innovation to markets or indeed to create new markets in which the winner takes all.

4. Strategy and participation

4.1. General features

The interviews disclosed a high degree of commonality among the firms' approach to participation in their environments. Four general features stand out:

- All the firms pursue generic focus strategies
- Most of the firms were born international
- All firms found value in the same features of Cloud platforms
- Narrow margins, cash-burn and product-market fit were challenges for all businesses.

4.1.1. Focus strategies

All the firms pursued focus strategies:[6] they are intent on capturing all of an often highly-specialised niche rather than competing for market share.

This is a general feature of new technology businesses, and it seems likely that it is a natural effect of the lean start-up methodology that such firms adopt.

Under this methodology, the firm focuses its internal resources on developing its Minimum Viable Product (MVP) set, and outsources as many ancillary functions to the market as possible. MVP tends to produce a small, tightly focused value proposition which appeals more naturally to a small set of specialist users.

Lean start-up methodology exemplifies the principal articulated by Ronald Coase in his *Theory of the Firm* (1937):

> *A transaction is performed in markets when the costs of internal organising are higher than the market cost*.

4.1.2. International from birth

All but one of the firms studied went international from launch or very soon after launch. Firms usually explained this as an inherent feature of the digital revolution and a general international trend. Even the four firms (A, B, D and K) who followed the traditional route of building scale in New Zealand before going offshore had international aspirations from the outset.

Digital native companies assume themselves to be international from inception: to confine their scope to New Zealand would require a conscious decision.

The firms all agreed that New Zealand markets are too small and remote for them to pursue anything other than a focus strategy aimed at international customers.

[6] Porter (1980) posited three generic strategies: cost leadership , product differentiation and focus. Treacy and Wiesema (1993) recast Porter's focus strategy as a value discipline which they called customer intimacy.

4.1.3. Cloud

Doing business over a Cloud platform was essential for all the companies we interviewed. The benefits are instant, inexpensive scalability, international reach and the reduction of the need to invest in infrastructure to an insignificant level. Cloud platforms enable New Zealand companies to overcome our natural disadvantages of scale, distance and thin markets.

Several of the firms acknowledged that doing business over a Cloud platform did expose them to some degree of security risk, but all thought that the advantages outlined above outweighed the risks.

This was either because they thought the security risk was small – no greater than any ordinary manageable business risk – or they thought the Cloud platform provider (Amazon Web Services (AWS) in most cases) had security and resilience measures in place that were as strong as could reasonably be expected. Company E went so far as to say that, as far as they were concerned, AWS bore all their security risk.

4.1.4. Challenges

The SaaS businesses in the sample all tended to be high-volume, low unit margin businesses. One business within the sample used the fact that the deployment of physical infrastructure was part of its value proposition to generate profitable consultancy revenue stream.

Four of the business (2 in their establishment phase, 1 revitalising its value proposition after several years of declining revenues, and 1 other) had concerns over their level of cash burn. The other businesses had faced this challenge earlier when they established.

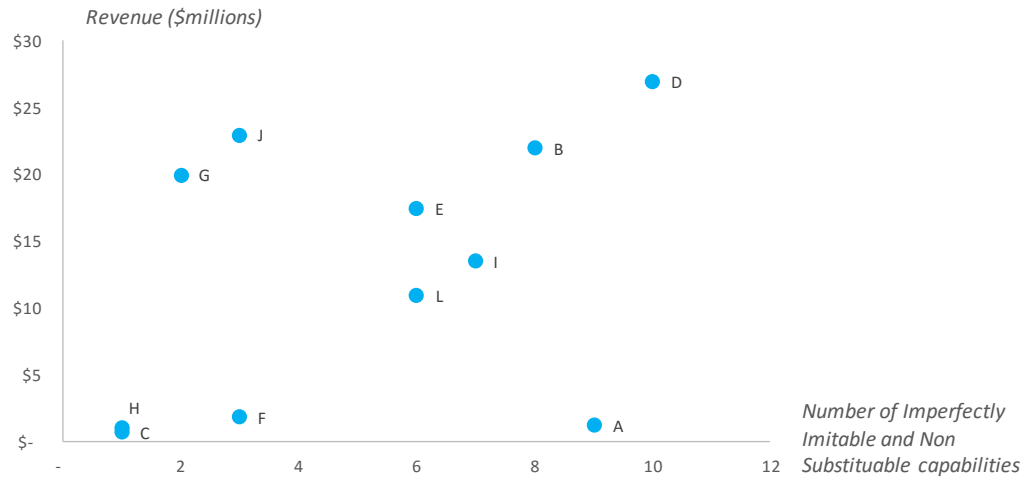
Almost all the businesses had concerns that their value propositions might not be perfectly aligned to value dynamics in the market place. This was usually expressed as a concern over 'product-market fit'.

One company had executed a pivot after its initial target customer base delivered few sales despite high levels of expressed interest. When the business pivoted from Environmental Compliance to Health and Safety monitoring and certification, the company entered its growth phase.

4.2. International revenues

A primary objective of this study was to identify how successful firms went about securing international revenues. We found that high revenue correlates with investment in imperfectly imitable or non-substitutable capabilities (see section 5) rather than years in business or growth rate.

Figure 7 Revenue and investment into capabilities



Source: NZIER

Company H has been excluded from this chart because its revenues were substantially higher than those of any other firm in the sample.

4.3. Delivery chain

4.3.1. Customers

The target customers sought by the companies in our sample can be classified into two groups.

Group 1: Firms intending to capture a market:

- **Capture a mass market.** Only one company (Company H) was engaging in a true mass market play. Company H sees its market as all accountants and all people who use accountants
- **Capture a specialist market**. Companies A, C, G, I, J and L intend to capture all of the market for their particular value proposition (H&S regulatory compliance, flash marketing, online translation, corporate travel, retail point of sale, movie data analytics, respectively)
- **Capture a hyper-specialist market**. Company B intends to capture the entire market for integrated point of sale systems for petrol stations.

Group 2: Firms intending to win market share:

- **Participate in a mass market.** Companies E and H participate in markets for enterprise solutions and metadata management, respectively
- **Participate in a specialist market**. Company F does not expect to become the sole supplier of transmedia services.

Companies that seek to capture a market outnumber those that seek to win share by participating in a market three to one. It is also noteworthy that Group 2 firms are those that report adversity. Company E is executing a turnaround, Company H has

executed a pivot over the last three years and Company F is struggling to grow. Group 2 contains two of the lowest growth rates in the sample.

4.3.2. Outputs

In his 2008 study, Pynnönen investigated the number of value streams the market leaders had in each category under the same taxonomy we have used in this study. The results are below. The numbers inn each of the columns are the numbers of value streams within each category. For example AOL had 11 free services within its value proposition, but Google has 13.

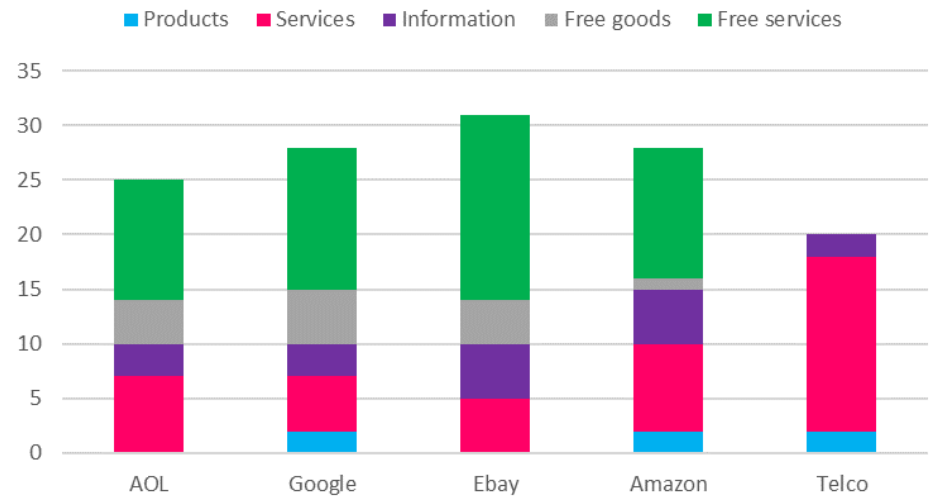
Table 4 Comparison of product based value stream frequencies in case firms

Value stream	AOL	Google	Ebay	Amazon	Telco
Products	0	2	0	2	2
Services	7	5	5	8	16
Free goods	4	5	4	1	0
Free services	11	13	17	12	0
Information	3	3	5	5	2
Total	**25**	**28**	**31**	**28**	**20**

Source: Pynnönen (2008)

The high number of free goods and free services is very apparent. It is helpful to represent this as a stacked graph.

Figure 8 Comparison of product based value stream frequencies in case firms

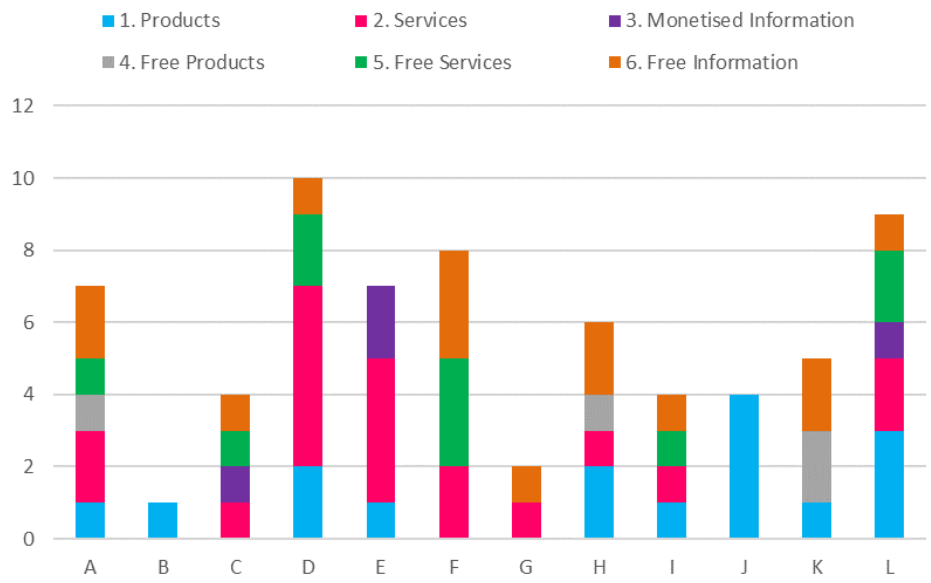


Source: Pynnönen (2008)

In contrast, the firms examined in this study exhibited the following pattern (Figure 8). As with the figure above the number of value streams is represented by the vertical axis. Not only are there relatively few value streams overall, but in most cases the proportion of free goods and free services is low.

Figure 9 Type of value streams by company, number

All value streams

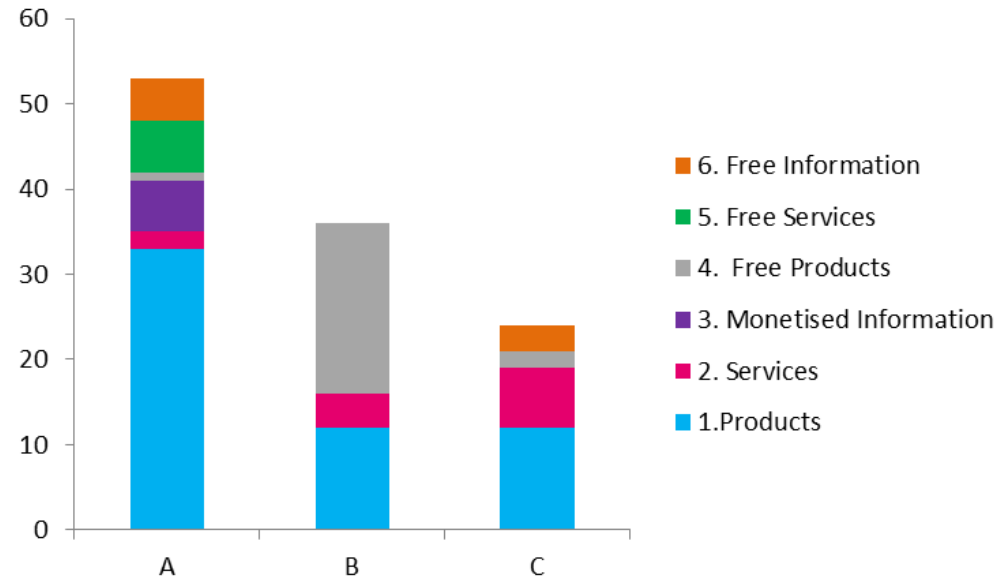


Source: NZIER

This is consistent with the pattern observed in the firms in our earlier study (NZIER, 2015). These three larger New Zealand firms monetise as many value streams as possible, and do not appear to see adding free goods and services as a useful means of enriching their value proposition.

Figure 10 Type of value streams by company (NZIER 2015 study firms), number

I (Imperfectly Imitable) and N (Non-substitutable) value streams only

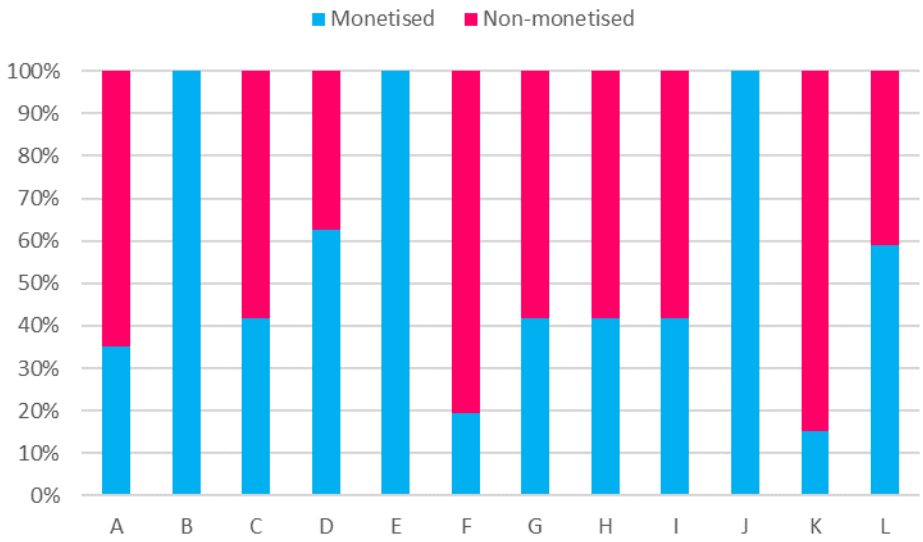


Source: NZIER

The firms we interviewed for this study are closer to the market leaders studied by Pynnönen's team in 2008. The overall proportion of non-monetised streams within the sample approaches 50%, not at the Google or Ebay level yet, but getting nearer. This is likely to be an effect of the firms' approaches to value-add, which will be discussed in the next section.

Figure 11 Type of value streams by company, percentage

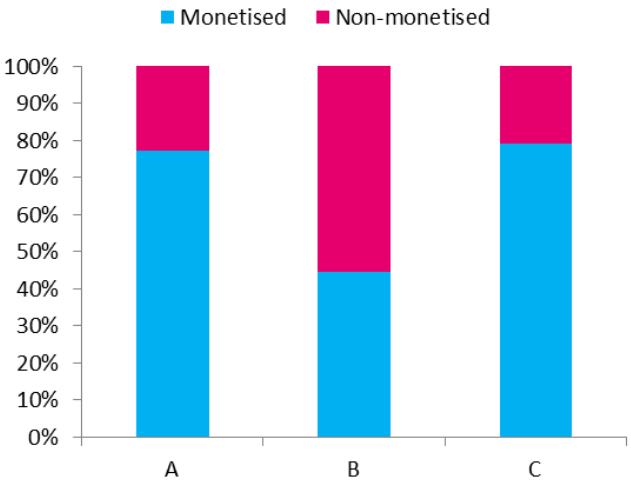
Share of number of value streams, not by value; All value streams



Source: NZIER

Figure 12 Type of value streams by company (NZIER 2015 study firms) percentage

Share of number of value streams, not by value; I and N



Source: NZIER

As in the earlier study, the notion of monetising information was still under development. A few firms did have paid information streams, and several were thinking about how the information they captured might be commercialised, but the focus in all the firms was on the paid goods and services which formed the core of their value propositions.

4.3.3. Inputs

Almost all the firms said that Cloud hosting and the business management software that runs over a Cloud platform were their most important inputs. Indeed, all the firms saw the ready availability of Cloud hosting as the critical business enabler of our age.

Cloud provides these firms with an inexpensive, fully scalable platform on which the business can run, and an easy distribution platform, also scalable. Nine of the firms used AWS (Amazon Web Services) as their Cloud supplier, two used IBM, and one self-supplied.

Other than Cloud services these companies were notable for their self-reliance. They bought very little into the business from outside, preferring to develop capability internally.

The two main reasons for this are:

- all but one company (Company B) do not sell a physical product as part of their value proposition
- the ready availability of inexpensive software on Cloud means that many transactions, which under the lean start-up methodology used in technology companies in the 1990s and 2000s – accountancy, human resources- logistics and workflow management – would have been undertaken outside the company in the market can now be brought in-house, but as software rather than professional services.

Three firms had critically important information streams as inputs. In two of these cases the streams were not monetised, but shared so that both parties could benefit from the combined value proposition.

4.4. Challenges

Most of the firms were concerned that the actions of government might impose constraints upon their field of operations. This could take the form of regulation, taxes, or simply preferring locals over internationals.

Company D had an interesting perspective on this last point which resonated with several other firms within the sample. Company D observed that governments overseas tend to favour local service provides, but the opposite is the case in New Zealand. While this is an interesting observation, it is worth noting that both the New Zealand government and the governments of most of our key markets are part of the WTO's Government Procurement Agreement.[7]

An interesting challenge identified by several of the firms was the fact that buyers or decision makers were often members of a different generation to users. Most users accustomed to Cloud-based digital services and products are in their twenties and thirties, but those with purchasing power are often older than forty-five. Such people are less likely to see the advantages conferred by the Cloud economy and often rate the risks associated with Cloud-based services, such as security or network

[7] https://www.procurement.govt.nz/procurement/pdf-library/suppliers/gpa-accession-overview.pdf

underperformance, more highly than the advantages, such as cost and ubiquity. They also exhibit a tendency to mistrust the reduction of human intelligence to algorithms or other forms of machine intelligence which is such a key part of many digital value propositions.

The firms shared the apprehension usual in business about the possible actions of competitors. In case (Company J) this concern took the form of concern distributors might become competitors.

This was particularly astute of Company J as it showed a nascent awareness of the competition problems that are inherent in what a scant literature describes as the future internet space, which can be taken as equivalent to the Cloud or digital space.

A non-exhaustive list of these problems follows:

- The online experience arises though the collective contributions of many actors. This raises the difficulty of writing and enforcing contracts in multi-sided networks. This can become acute as value streams, monetised and non-monetised, proliferate within the network
- Strategic behaviour intended to appropriate some or all the value created by another party's investment
- Strategically withheld co-operation. This can take many forms, ranging from impairing a competitor's value proposition by degrading the quality of service they receive to using customers as pawns in games of brinkmanship
- Exploiting lock-in once relationship specific investments have been made. In this case the strategic behaviour can take place before the investment as well as afterwards, depending on the power differential between the parties.

Awareness of these competition problems, and how regulation might address them is rare anywhere. Company J was the only firm in the sample which indicated any awareness that these competitive games can be and are played in the Cloud economy.

Finally, we found that those firms within the sample who are still in their establishment phase were concerned that they might run out of cash. In this they are no different to any other new business.

None of the firms saw attracting skilled people as a constraint. The skills needed were seen as readily available from the market. This finding was reinforced when we undertook the dynamic capabilities analysis: human resources were usually identified as valuable, rarely as rare, and never as imperfectly imitable or non-substitutable.

4.5. The role of government

All but one of the firms were engaging, or planning to engage with government. The eleven were very appreciative of the support Callaghan Innovation and NZTE have given to their businesses.

Funding from Callaghan Innovation has been a key enabler for several firms, and NZTE's international networks were seen as an extremely useful means of accessing new markets. However, neither body was considered strong in capability building.

The firms were concerned that legal and regulatory changes might impact their businesses. Otherwise their main concern was government procurement, which they saw as a missed opportunity.

Securing government business represented a significant opportunity for all the businesses in our sample, as government offers scale and scope not widely available elsewhere in the New Zealand economy, but all saw government procurement processes as bureaucratic and costly, with slow, uncertain decision-making steps that can tie up internal resource.

The relative lack of digital awareness among more senior decision makers noted in section 4.5 above was also a problem with engaging with government.

A few, notably Company D, expressed the view that the New Zealand government exercises a preference for overseas providers, unlike foreign governments, who exercise a preference for local providers.

The other side of this coin was the fact that securing the New Zealand government as client helped sales offshore, as the New Zealand government enjoys a high reputation among its peers for the quality of its processes and practices, especially its digital ones.

The firms kept a wary eye on the actions of foreign governments. In addition to the risk of protectionism or preference implemented through procurement processes or protracted negotiation, possible barriers included currency fluctuations, local tax regimes and legislative or regulatory changes.

4.6. Summary

The firms studied were very similar in their view of the benefits of using the Cloud, their use of focus strategies and in being born international or going international soon after launch.

They secured sustainable international revenue by building imperfectly imitable capability and using it to capture all of a particular specialist market. Seeking to capture a share within a market seems to be a less productive strategy.

Free goods and free services make up a higher proportion of their value propositions that was the case with the larger firms examined in NZIER's 2015 study, but does not yet approach the levels observed in market leaders. Their value propositions require few external inputs.

As internet businesses, the companies studied are vulnerable to the kind of strategic behaviour available to internet businesses, notably value appropriation, strategically withheld cooperation and lock-in. They were sometimes frustrated that younger generations had a readier appreciation of the benefits Cloud businesses could deliver than older.

Availability of skilled labour was not seen as a constraint.

Finally, the firms studied shared the usual business concerns over the power of governments at home and abroad to constrain their operations, and the concerns common among start-ups around the rate of cash-burn.

5. Value

5.1. Growth

The firms studied generally exhibited very high growth rates. There is no strong correlation between growth rates and years of operation.

Table 5 Firms' years of operation and growth rates

Company	Main activity	Years active *	Growth rate
C	Marketing for SME retailers	3	200%
H	Metadata management	3	50%
A	Regulatory compliance	6	300%
G	Translation	7	80%
J	Point of sale	7	50%
K	Accountancy	7	33%
L	Movie data analytics	7	100%
D	Education platform	8	10%
F	Transmedia	10	10%
B	Gas stations point of sale	12	400%
I	Corporate Travel	21	30%
E	Open Source Enterprise Solutions	25	-15%
*under current business model			

Source: NZIER

All the firms are active domestically as well as internationally, but in every case but one, international revenue is growing faster than New Zealand revenue.

Table 6: Domestic vs international growth rates

Company	Main activity	Domestic growth rate	International Growth Rate
A	Regulatory compliance	300%	15%
B	Gas stations point of sale	10%	400%
C	Marketing for SME retailers	"Smaller than international"	200%
D	Education platform	7.5%	12.5%
E	Open Source Enterprise Solutions	0%	-15%
F	Transmedia	5%	15%
G	Translation	5%	80%
H	Metadata management	0%	50%
I	Corporate Travel	10%	30%
J	Point of sale	20%	65%
K	Accountancy	25%	40%
L	Movie data analytics	0%	100%

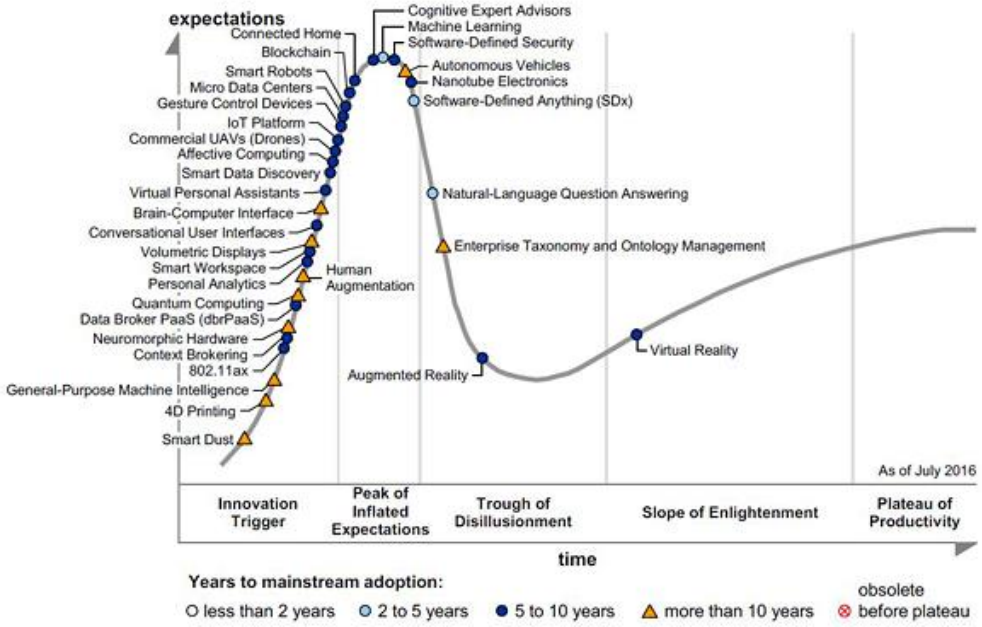
Source: NZIER

Of the four firms (A, B, D and K) that followed the traditional path of building scale within New Zealand before testing offshore markets, two (A and B) still have higher revenues in the New Zealand than overseas, and both expect this to change soon, drastically in the case of B.

The most important generic growth driver active is the continuing expansion of the possibilities offered by the digital economy.

There was general agreement amongst the firms that machine learning and artificial intelligence are the most significant current developments. It is therefore salutary to observe that 'machine learning' featured at the peak of expectations curve in the most recent *Hype Cycle for Emerging Technologies* published by Gartner Inc in August 2016.

Figure 13 Hype cycle for emerging technologies



Source: Gartner (2016)

It is also worth noting that Company G, which enjoys great success in the world of online translation, does not rely solely on machine learning. The technology at the core of Company G's value proposition is intelligent string matching, but human translators are used to improve the accuracy both of the output and of strings within Company G's code.

Two firms (A and B) found opportunities by closely observing changes in regulation (in New Zealand and the USA, respectively) and responded quickly to give companies an easy path to compliance and certification. This suggests that observing market specifics can be a useful tactic when identifying niches.

Only two significant New Zealand growth drivers were identified by the majority of the respondents:

- The ability to generate partnering opportunities within the New Zealand market. Several of the respondents observed that New Zealand firms are not good at partnerships, as they tend to see business relationships as transactional and extractive
- Government as a purchaser. The New Zealand government was often seen as the only organisation with the scale and purchasing power to sustain a domestic Cloud business. All the firms in the sample were low unit revenue businesses, as is very often the case with digital businesses. We will consider the role of government as a purchaser further in the next section.

When asked to identify internal growth drivers, most companies agreed that this was a matter of building and maintaining the commercial disciplines and agility to ensure a good product-market fit. All accepted that their value propositions needed to be constantly realigned to capture their customers' desired value. The approach they took to doing this will be discussed in section 5.3.

5.2. Value chains or value networks?

The thinking of the firms studied was more akin to value networks than value chains. None of the firms conceived their commercial space as a series of value-add links, instead they often described the commercial space as an ecosystem.

All the firms viewed the development vector within the ecosystem as a process of enriching a stable value proposition rather than product diversification or accumulating value throughout a chain. The majority of the companies viewed partnership or collaboration as a natural means of product enrichment.

Value network thinking was much less developed than was the case in the earlier NZIER study. The firms studied did not display the same sophisticated awareness of the roles different actors could play within the overall value creating system.

Indeed, the firms commonly displayed little awareness of the overall value-creating system. Their knowledge of their niches was impressively comprehensive, but their knowledge even of markets adjacent to their niches was often sketchy,

The firms in the current study tended to be opportunistic rather than strategic in securing partnerships. We discovered a lot of what we might call coat-tail thinking.

Several participants had secured, or were seeking to secure one critical relationship with a major industry participant who would then take care of all distribution and marketing issues or, in some cases, provide the entire growth path for the company. Two of the companies studied stated that they were seeking an early exit from the business.

5.3. Value-add through value proposition enrichment

We found that only those firms for whom services formed part of their value proposition saw value-add as concept relevant to their business development activities. However, these firm did not regard their supply chain as a series of links in which value is added cumulatively.

Instead they saw it as a process in which their capability was leveraged into adjacent markets – “capturing more of the workflow” – as one such firm put it. “Value add is problem solving” said another.

Otherwise, value-add seemed to be a foreign way thinking for these firms. One firm – a successful, established business, went so far as to say “we do not have value add opportunities”. This is not surprising given that the firms studied conceptualised their commercial space as an ecosystem or value network rather than a value chain.

When asked how the firms set about extracting more value from these ecosystems the responses were consistent. The firms described a world in which the contract enrichment of the core value proposition was the strategy employed to extract value cumulatively from the value network. One participant described this process as “continuing to build the ecosystem”.

This seems to be the reason why the firms in this study showed a higher proportion of free goods and services in the value propositions than was the case with the larger

firms studied by NZIER in 2015. It is also probably a point of difference between Cloud-native firms (the 2017 group) and pre-Cloud firms (the 2015 group).

The majority of the firms saw partnership and collaboration as important ways of enhancing the value proposition. The idea is that two or more market participants can work together to co-create value. In this situation, the individual value propositions enhance and enrich one another, and the network effects generated ensure the participating firms are better off.

Several firms were extending this line of thinking to their own customers by creating opportunities for the customers to enrich the value propositions of the firms. The most common way of achieving this was through API (application programming interfaces) that is, offering customers space within the company's offering in which they could develop value proposition enhancements. The aim is to create an internal market place for add-ons.

Six of the firms identified after-sale service as a potential or actual value-add opportunity.

5.4. Direct sales[8]: a limiting factor?

Table 7 Firm characteristics

Company	Main activity	Years active *	Revenue ($M)	Growth Rate	International %	Sales model	Moving to indirect?
A	Regulatory Compliance	6	1.3	300%	15%	Direct	Y (coat-tail)
B	Gas stations point of sale	47 (12)	22	400%	20%	Direct	
C	Marketing for SME retailers	3	0.75	200%	90%	Direct	Y (exit)
D	Education platform	8	27	10%	77%	Direct	y (partners)
E	Open Source Enterprise Solutions	25	17.5	-15%	95%	Direct	
F	Transmedia	10	1.9	10%	10%	Direct	Y (exit)
G	Translation	17 (7)	20	80%	90%	Direct	
H	Metadata management	9(3)	1	50%	98%	Direct/Indirect	Y (exit)
I	Corporate Travel	21	13.5	30%	90%	Direct	Y (partners)
J	Point of sale	7	23	50%	90%	Direct/Indirect	
K	Accountancy	7	274	33%	78%	Direct	
L	Movie data analytics	7	11	100%	95%	Direct	

*Bracketed figure indicates years curren business model has been in force

Source: NZIER

All the firms use a direct sales model. Two combine this with an indirect sales model, and half are seeking to do this as well, most usually through exiting via a trade sale. Three are contemplating various forms of partnering.

Company J makes strong use of distributors, but worries that they could become competitors by replicating Company J's value proposition and/or bundling it in such a way that there is in no revenue share for Company J. This is a major strategic issue for Company J and points to the difficulty of protecting IP in a Cloud-based world.

That said, it remains true that indirect sales can be an important tactic for winning international revenues. Indirect sales offer more channels to market, enables marketing and distribution costs to be defrayed over a wider client base and can create the opportunity for the firm to focus on its core capabilities. It can also offer a means

[8] Under **direct sales** model the sales transactions take place between the selling company and its customer, without the involvement of an intermediary. Under an **indirect sales** model a third party, such as an agent of affiliate, sells on behalf of the company that produces the goods or services.

of addressing linguistic or cultural idiosyncrasies which may be important in particular markets.

Strategic engagement with indirect sales channels can the beginning of value network thinking. It compels companies to think of how they can engage with other actors in a value-creating system to co-create value. This process can lead them to consider how thy might use non-monetised value streams and information streams to create and sustain the relationships which so often underpin success in crowded, highly competitive markets.

5.5. First build, then find customers?

The firms in the sample followed a similar pattern of establishment, which we summarise as follows.

An entrepreneur gets excited about a particular technological capability or product idea. The entrepreneur develops and builds, and, having done that, then seeks clients. When this gets hard, they start thinking about partnerships, or using others for distribution, or exit. Several participants in our sample felt trapped by their previous decisions and were seeking an exit route.

In short, the planning runs from technological possibility to customer desired value, not the other way. A large literature exists that indicates that this is the reverse of the optimal procedure, which NZIER reviewed in its 2015 study for NZPECC. It is far better to proceed from the customer desired value and align the company's internal capabilities to the customer value dynamics.

Failing to do this brings a host of problems in its wake, among which can include misunderstanding market demand, concentration risk deriving from lock-in with one key customer or distributor (the situation faced by Company E) to market sizing errors.

Several of the firms in our sample realised this and had started again (or were starting again) by working backwards from customer need rather than technological possibility. One firm (Company A) managed to pivot target customer segments from Environmental Compliance to Health and Safety in mid-stream without changing its value proposition.

We observed in section 4 that the firms are all very lean, focused and efficient on the input side. The strategic gap with respect to value capture is on the output side.

5.6. Getting noticed

Most of the firms identified getting noticed as a barrier to value capture.

Cloud offers connectivity to all, but the outcome of this is a cacophony of competing brands and value propositions on the internet. Consumers are jaded and overloaded, and it is very difficult to cut through.

This problem makes the case for identifying and targeting a niche still stronger, and points to the desirability of partnering or bundling with better established digital brands.

5.7. Summary

The firms studied viewed their commercial environment as more akin to a value network than a value chain, and saw the continuous enhancement of the value proposition as the basic method of extracting more value from their markets. This accounts for the higher proportion of free goods and free services within the firms' value propositions than was the case with the firms studied by NZIER in 2015, although the current sample still falls short of the market leaders studied by Pynnönen in 2008. The high growth rates reported testify to the success of this approach, but the strong reliance on direct sales may be a limiting factor.

The establishment model followed by many of the firms – first build the product and then try to commercialise it and sell – is riskier than the opposite approach. Finally, getting cut-through in an overcrowded online marketplace is a challenge, and an area in which partnership with stronger brands could help.

6. Dynamic capabilities

6.1. Focus strategies and blue ocean thinking

A surprising finding from our study was that awareness of competitive advantage was not well developed.

It is likely that this is at least partly attributable to the focus strategies employed by the companies in the sample. A company intent upon capturing all of a niche through a perfect product-market fit is likely to be less concerned about its market position relative to competitors than a firm intent upon increasing its market share of a market in which there are already many competitors.

Many, perhaps all, of the companies in our sample were influenced by blue ocean thinking which is common in technology strategy. The point of which is to discover and capture a completely contested space with a newly minted value proposition. A blue ocean strategy aims to create new markets, not to reallocate the shares in the old markets.

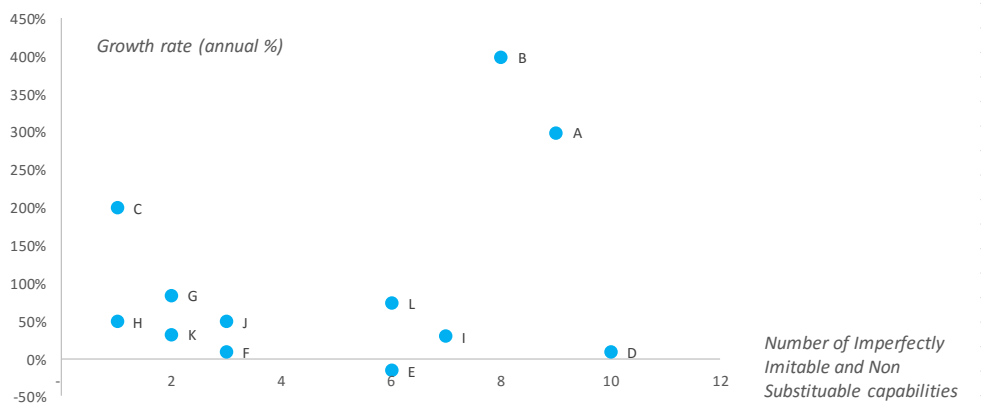
6.2. Imperfectly imitable capability builds revenue

This is also the reason why the firms studied tended to build up concentrations of imperfectly imitable capability, based on their intimate knowledge of the target sector. The firms saw their generic comparative advantage as the ability to source skills from the market and direct and combine them in a way that appealed to the target niche.

Skills were never identified as valuable or rare in the interviews. Instead they were seen almost as industry consumables, readily available from the market. Compared to NZIER's previous study, non-substitutable capability was rare.

Firms with imperfectly imitable capability had higher revenue (13), but not necessarily higher growth rates.

Figure 14 Capabilities and annual total revenue growth rate



Source: NZIER

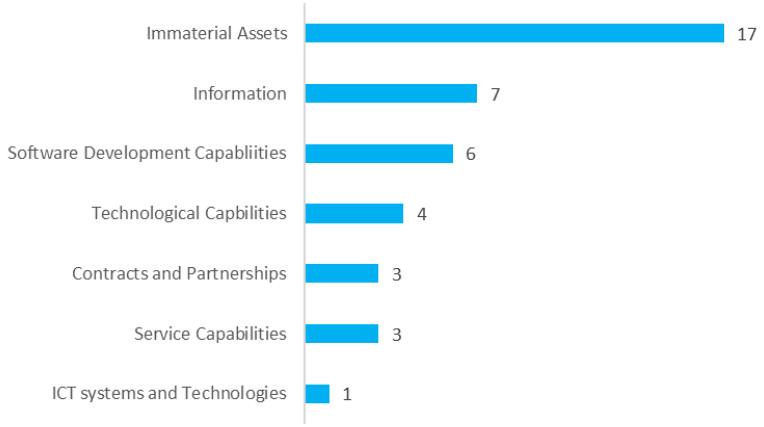
The fact that building imperfectly imitable capability seems to generate higher revenue, but not necessarily higher growth rates, could be an important factor for firms seeking to internationalise. Steadily increasing revenue can improve returns to scale without incurring sudden cost increases, which could be difficult for an inexperienced company to manage.

It may be that one of the barriers to international expansion faced by New Zealand firms is the increase in transaction, compliance and monitoring costs the expansion demands. Building imperfectly imitable capability and intelligent deployment of the advantages offered by Cloud platforms go some way towards addressing these barriers.

6.3. Which imperfectly imitable capability?

Most imperfectly imitable capability was concentrated in the immaterial assets category. The specific items included various forms of IP (including trade secrets), relationship-based capital, brand and reputation.

Figure 15 Number of imperfectly imitable capabilities



Source: NZIER

Finally, on the evidence of this study, the oft repeated cry that skilled IT professionals are in short supply should be taken with a grain of salt. None of the firms interviewed stated that skills were valuable or rare, and several said that they did not face labour constraints. Whatever skills they needed could be readily sourced from the market.

7. Common themes

7.1. The firms had many similarities

We selected the firms for the study to provide the greatest degree of diversity achievable within a sample of twelve. The businesses dealt in very different sectors, ranged in size from annual revenues of less than $1 million to almost $300 million, some had been going for less than five years, others had been in business for decades.

Given this diversity it was somewhat surprising to find that these businesses displayed such striking and significant similarities. The most generally salient of these were:

- Focus strategies: setting out to capture a niche is a more reliable strategy than trying to win share in a mass market
- High growth rates are the norm
- Cloud-based firms are born international
- The firms are very self-contained. They rely on very few inputs outside the firm.

In the remainder of this section we will discuss the features common to most of the firms. These carry policy implications that we discuss in the next section.

7.2. Firms build value propositions and then find customers

This is the general strategy employed by the firms in the study. If customers for the value propositions do not appear, the firms take advantage of the agility inherent in the fast start-up methodology to pivot to another target sector.

7.3. Value network, not value chain

None of the firms regarded their commercial environments as a value chain in which value is added cumulatively until the end-user is reached. Instead, the operative concept was that of a value network, sometimes described as an ecosystem. However, there was little awareness of value network thinking among the firms we studied.

In particular, there was:

- Little appreciation of the possible usefulness of non-monetised value streams
- Limited use of information streams
- Little awareness of the variety of roles different actors could play within their ecosystems.

7.4. Value proposition enrichment is the value-add path

Moving up the value chain is not a relevant concept for these firms, as there is no chain to move up. Instead, continuously enhancing the core value proposition is the value-add path for these firms.

7.5. Level of strategising is thin

As section 7.3 suggests, the strategic thinking we found was thin and narrowly focused.

The business leaders focused on their niches, and the approach to their clients was transactional rather than strategic. Most firms gave limited attention to the possibility of co-creating value through indirect channels: indeed, growth itself was often pursued opportunistically rather than strategically.

The thin level of strategising extended to the firms' awareness of the strategic behaviours available to internet businesses: value appropriation, strategically withheld cooperation and lock-in.

7.6. Cloud

The firms in the sample value the Cloud environment so highly it could almost be said that they take it for granted. It provides a fully scalable platform upon which almost all aspects of the business can be run, and a fully scalable distribution platform in which there is little difference between a customer next door and a customer on the other side of the world.

8. Policy implications

8.1. Government is playing a useful role

The participants were appreciative of the role played by government. Several had received funding from Callaghan Innovation, sometimes several grants.

Others mentioned the useful role NZTE had played in researching international networks and putting New Zealand firms in touch with influential people capable of helping New Zealand firms enter overseas markets.

8.2. Find alternatives to commercialisation

In section 7, we observed that firms tend to build a value proposition and then find customers for it. The firms we studied have all enjoyed a measure of success with this approach, and with little government support beyond that outlined in section 8.1 above.

However, one of the objectives of this study is to suggest ways in which government might support the expansion of the New Zealand Cloud-based sector, so we should give some thought to approaches which stand to increase the success of these firms, or ensure that fewer Cloud-based firms perform badly, or fail.

NZIER's previous study of Global Value Networks (2015) investigated three large successful technology businesses. Common to all three was the practice of carrying out innovation very close to end-users – in fact, for these firms the innovation process consisted of a series of transactions between the innovating firm and the end-user, without intermediaries.

This approach contrasts with that adopted by the twelve firms under examination in this study. As noted above, these firms built their value propositions and then searched for customers. They are innovating a long way from the market; surely a riskier strategy than that adopted by the larger firms studied in the 2015.[9]

In New Zealand, the official innovation system is built around a conceptual process flow that runs as follows. Pure research is carried out (perhaps in a university or research institute) which eventually produces a value proposition or product. This is then 'commercialised', that is, a market is then sought for the value proposition.

The process followed by the firms studied in 2015 was precisely the opposite of this commercialisation process: those firms started with the changing value dynamics of their customers and worked from there to build their value proposition or product design by innovating the internal business models which made up the overall value proposition.

In a 2013 study the OECD surveyed many innovative businesses across Europe and grouped the businesses into categories based on the most frequent modes observed within the industry.

[9] It could be argued that those firms who were experimenting with APIs offer a counter-example. However, these developments are at present marginal to the firm's activities in every case, and are of very recent development.

These are outlined in Table 8.

Table 8 Modes of knowledge sourcing and innovation

Networks (Innovative mode)	R&D	Knowledge sources	Collaboration	Innovation activities / investment	Innovation outcomes
R&D product/client oriented	**Yes**	**High on clients and competitors**	**Low, mainly clients and customers**	**Intramural R&D, other activities including design**	**Goods, marketing, partly services**
Collaborative R&D/science-based	Yes	High on labs, universities, government	High on all, including institutional	Intramural and extramural R&D	New products (goods and services)
Embedded knowledge sourcing	No	High, most sources	Low	Capital acquisition	Low, only production process
Open process modernising	No	Market sources, principally suppliers	Market sources, principally suppliers	Training and capital and knowledge acquisition	Process
Wider innovating	No	Low, consultants	Low	No systematic activity	Services, marketing, organisation

Source: OECD (2013)

The official innovation system in New Zealand – the commercialisation process flow – is focused on the second row in the table above (Collaborative R&D/science based). The first row – the category which fits the firms in this study – receives scant attention or policy support.

With one exception (Company A), the firms in our study have no links with universities or centres of research, so investment in R&D through these channels will have little impact on them. Clearly R&D product/client oriented networks stand to benefit from different forms of policy support.

Instead of taking such firms through a process of commercialisation, helping firms to identify market opportunities and develop value propositions that service them as efficiently as possible would reduce the risk of a mismatch between the value proposition and the market for it.

The OECD's work provides a useful basis for developing a rationale for policy intervention to create and support value networks. The private benefits from network formation may not cover the private costs for some partners, although the social benefits may be substantial. An individual firm will only engage in developing that network if its private benefits exceed its private costs.

Therefore, there may be room for efficiency-enhancing government intervention to address the awareness, information, search and transaction cost problems associated with networking.

A possible framework could be developed around the different stages of the networking process. The OECD has set out a process for network formation in which the stages are:

- Developing awareness of a networking possibility
- Searching for partners
- Building trust and a shared knowledge base
- Organising the network
- Ensuring complementary resources
- Active co-operation (OECD, 2013).

Market failures can occur at each stage in the process, but are frequent in the early stages of network formation and operation (search, setting-up, trust formation, etc.).

Network actors are better placed than government to deal with challenges in the later stage of the process, so government intervention can usefully be concentrated in the earlier stages: developing awareness, searching for partners, and building trust and a shared knowledge base (OECD, 2013).

8.2.1. Helping firms understand value networks

Inherent in the foregoing is the need to help firms understand how value networks operate. This would enable firms to be more strategic in their approach to international expansion. Government could help by disseminating information on value networks through Callaghan Innovation, Ministry of Business, Innovation and Employment (MBIE) or NZTE.

8.3. Risk management

8.3.1. Online jurisdiction

The online experience arises though the collective contributions of many actors. These actors collectively comprise the value network, but, as we noted in section 4, certain competition problems are specific to the Cloud-based digital economy. We summarise the main ones as:

- The difficulty of writing and enforcing contracts in multi-sided networks. This can become acute as value streams, monetised and non-monetised proliferate within the network
- Strategic behaviour intended to appropriate some or all of the value created by another party's investment
- Strategically withheld co-operation. This can take many forms, ranging from impairing a competitor's value proposition by degrading the quality of service they receive to using customers as pawns in of games of brinkmanship
- Exploiting lock-in once relationship specific investments have been made. In this case the strategic behaviour can take place before the investment as

well as afterwards, depending on the power differential between the parties.

The drive towards Schumpeterian competition – capturing all of a particular niche exacerbates these problems, as the stakes are perceived to be higher by the actors involved. Managing the risk of losing all of one's target market focus is more of a winner-takes all game than attempting to win market share.

In a 2009 paper entitled *The Future of Internet Regulation*[10] Philip J. Weiser proposed the following response to these concerns:

> *"In particular, a central rationale for developing a regulatory framework to govern such matters is that it can assure all stakeholders of the ability to employ business strategies without negotiating a maze of private contracts with the affected parties.*
>
> *Viewed in this light, one important set of goals for Internet regulation – whether public or self-regulation – is to lower transaction costs, provide a principled structure to facilitate negotiations, and provide some measure of predictability and reliability as to the rules governing commercial relationships is this market. In short, the regulatory structure advances these goals by channelling multiparty contracting problems into a framework that avoids the escalation and politicization of disputes and misunderstandings.*
>
> *Without some oversight mechanism to assure all parties the opportunity to deal fairly with one another and build trust that a stable equilibrium will continue, the welfare of end users, applications developers, and broadband service providers remains at risk of being compromised."*

We suggest that the New Zealand government could indeed facilitate such a principled structure for negotiations aimed at limiting the damage the strategic behaviour set out above can cause. Effective organisations could include MBIE, Internet New Zealand, NZTE and the Commerce Commission, and of course their peers overseas.

8.3.2. Physical jurisdiction

Related to the above, there is a role for the New Zealand government to work with overseas governments to secure the ability for New Zealand firms to compete on an equal footing with offshore firms. Some of this activity will cover conventional areas of law and regulation such as IP protection and competition law, but the scope should be widened to include practices that can adversely affect the end-user experience. Some of these practices could be considered non-tariff barriers.

Examples include service squeeze, a practice in which an actor gives preference to its own service over that of another, and setting and policing appropriate quality of service measures. National regulatory authorities could be best placed to take action against such practices. More generally, anti-protectionism policies should be advanced

[10] Philip J. Weiser is Hatfield Professor of Law and Telecommunications, and Executive Director and Founder of the Silicon Flatirons Center for Law, Technology, and Entrepreneurship at the University of Colorado. http://lawweb.colorado.edu/profiles/profile.jsp?id=62

wherever possible, whether through reciprocity arrangements or by implementing agreed frameworks.

The government may also be able to play a greater role in lowering the transaction costs associated with doing business in international markets. NZTE already does a great deal in this space through is market intelligence activities, but it may be possible to use technology to extend this work. An example could be using big data technology to build an online clearing house for potential partners.

8.4. Capability building

The thin level of strategising we identified prompts the question: could leadership capability be a profitable area of improvement?

It is widely accepted that entrepreneurs are not necessarily the best people to run a business at scale internationally. Management skills are learned, but there is a dearth of large firms in New Zealand in which such skills can be exercised to the point at which they become automatic.

Incubators play an important role in improving leadership and capability in New Zealand firms. They provide the institutional memory that allows companies to benefit from the prior experience of others. They are also nexuses for agglomeration benefits, and are in a strong position to source appropriately experienced people to provide governance support for growing businesses.

An intervention that could make them more effective is the design and implementation of a formal framework that identifies and remedies capability gaps quickly. Such a framework need not be elaborate. Firms that know what they are doing just need better information and access to the networks that keep their value propositions fresh and sharp.

Those on the way need support through training and advice so that they can build the capability that will lead to success.

Those who don't know what they don't know need to understand what they don't know so that they can set out on the path to market success or pivot to another strategy with better prospects.

Government may also be able to play a role in capability building by making a condition of funding or support that capable or experienced management be brought into the companies supported, and by monitoring their effectiveness once introduced. In this way government may be able to ensure that underperforming firms or less capable managers are given a timely exit pathway, and so raise the general capability within the sector across time.

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