

The socio-technical networks of technology users in New Zealand

Simon Lambert

Faculty of Environment, Society, and Design

+64 3 321 8424

simon.lambert@lincoln.ac.nz



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1/ What we did...

- Identified, investigated, and interviewed 55 potential case studies.
- Finalised 43 TUI cases.
- Scored these cases for participation in selected socio-technical networks, identifying pathways to success *and* failure.
- Analysed transcripts for insights on social capital.



2/ Theory and Methodology

- Socio-technical networks
 - interconnections between people and technologies.
- Social capital (bonding, bridging, organisational)
- QCA and fsQCA



“We live our lives in a world of things that people have made. As human beings, we have both relations to each other - society - and also relations to the things we have made and to our knowledge of these things: technology.”

MacKenzie and Wajcman (1999)



3/ What networks are important for TUI?

- Capital
- Government support
- Manufacturing
- Business networks
- Intellectual property rights



4/ Capital

- primarily self-funded, family support, family firms (i.e., bonding social capital).
- overdrafts, credit cards.

Really, the only thing you need to innovate is money!

Raw Capital (\$)	Frequency	Fuzzy scores
0	2	0
500	1	.04
1,000	2	.04
2,000	2	.04
3,500		
5,000	2	.05
10,000	2	.06
20,000	1	.06
25,000	3	.10
40,000	1	.17
50,000	2	.24
55,000	1	.27
70,000	1	.40
80,000		
100,000	9	.54
150,000	2	.62
200,000	3	.70
250,000	2	.77
350,000	1	.87
500,000		
600,000	1	.98
650,000	1	.98
1,000,000	4	1



5/ Government Support

- Disparate: financial, pastoral, professional advice, training, facilitation.
- 26 case studies received no support by government
- Common complaints were complexities and costs (especially time).

You have to have a degree just to figure out how to fill out the form!



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6/ Manufacturing

TUI innovators were spoken of as ‘very clever’, ‘practical’, and ‘good with their hands’.

I have got a very good Chinese engineer, he speaks no English and him and I just solve problems by just drawing pictures, which is quite unique.

I get them made in Auckland because I refused to get them made in China, I wouldn't do it there I prefer it to be a New Zealander and I would obviously cut my profit to do that.



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7/ Other business activities

- What was often mentioned by our interviewees was other business networks in which the inventor participated.

I'm a carpenter by trade, I was a builder, chucked the building and worked in the bush, went back to the clear-felling and its sort have gone on into this. But I had tuna fishing as well, built a boat and did that for about 8 years, coming back every weekend and I got out of that when the store got busy...



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8/ Intellectual property rights

- Copyright, industrial secrets, design, trademark, patent
- IPONZ database

I've locked up all my intellectual property under my own name. And that's the only thing that has kept me alive. Because if I had bolted it into the company we would have gone down the tubes because the next guy, he wanted to dick me over and steal my IP.

Do I put \$80,000 into development or to put \$80,000 into a patent. It wasn't a hard decision in the end but I think the thing is you have to protect yourself from the patent system to a certain extent.



9/ But how to score success?

	Freq.	Fuzzy Score
Failure	3	0
Partial Success	9	0.2
Some Success	1	0.4
Cross-over	3	0.5
Limited national sales	8	0.6
National success	14	0.8
Export success	5	1.0

10/ Overall Results: pathway to failure

capital*govt*biz*ip*MANU → Failure

Poorly financed, with no government support, no other businesses, no or weak IP protection, but undertaking most or all of the manufacturing.



11/ Overall Results: pathways to success

CAPITAL*GOVT*BIZ*MANU*IP → S (n=9)



11/ Overall Results: pathways to success

CAPITAL*GOVT*BIZ*MANU*IP → S (n=9)

CAPITAL*GOVT*BIZ*manu*IP → S (n=5)

CAPITAL*govt*BIZ*MANU*IP → S (n=5)

CAPITAL*govt*biz*manu*IP → S (n=3)



12/ Overall Results: Success

CAPITAL*manu*IP → Success

Well-financed, undertaking little/no manufacturing, with relevant IP

CAPITAL*BIZ*IP → Success

Well-financed, undertaking other business activities, with relevant IP



13/ Comments

- TUIs are an important cultural component of New Zealand's economic development.
- TUIs draw on social capital (esp. bonding) while undertaking many of the necessary ancillary tasks themselves.
- A lack of technological literacy among some participants can be a major obstacle to innovation (...fewer NZers work in the trades).
- Several examples of successful (self-directed) engagement with Chinese manufacturing.



14/ Conclusions

- Successful TUI cases are adept at sourcing information and support but the costs and efforts to do this are considerable.
- For TUIs, ignorance, incompetence or dishonesty in officials was very disheartening and always tainted available options.
- Successful cases benefitted from informal information exchange with supportive and knowledgeable participants, often people with particular technological interests themselves.
- This community of innovators is struggling with innovation governance in which access to capital, sympathetic and relevant support, and accurate information is limited.
- Social capital is fundamental in resourcing TUI innovation (esp. providing financing).

