Acquiring Radical Green Innovations for NZ Construction

PhD Research Proposal

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Outline

- Full working title
- Research aims
- Where & what & why (3 slides)
- Conceptual framework (2 slides)
- (Dominant variables from lit review)
- (Objectives in this research)
- Research method & plan
- Profile of participants for empirical data
- Research benefits
- What I need ...
- Thanks
- Appendices
Procurement of non-incremental sustainable technology innovations

the case of small entrepreneurial firms supplying the New Zealand construction & building industry

? How do small entrepreneurial NZ construction firms procure non-incremental sustainable technology innovations?

Determine how procurement activities (i.e. acquisition practices & strategies) interact with innovation activities (i.e. related to non-incremental sustainable technology innovations) in small entrepreneurial NZ construction firms.

Determine the effect of dominant variables on this interaction.

Determine value-adding procurement activities in economic, social and environmental terms when interacting with innovation activities.

Operationalize such value-adding procurement activities into best practices (or even into management instruments).

Develop & communicate the new insights to firms and other participants involved in this research, and via academic journals & conferences. Recommendations for further research.

Where: Construction supply chain

Focus of research

Wider research area
What: Innovation examples

MODULAR
salt-removing render for restoring old brickwork

SYSTEM
lightweight impervious polystyrene concrete blocks

ARCHITECTURAL
concrete formwork

Based on Slaughter (2000) and with examples from Hardy (2007)
## Why NZ companies innovate

<table>
<thead>
<tr>
<th>Why NZ companies innovate</th>
<th>Why they DO NOT innovate</th>
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<tbody>
<tr>
<td>Competitive drive</td>
<td>Expensive and risky</td>
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<tr>
<td>keep customers &amp; profits</td>
<td>Customers do not perceive benefits</td>
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<td></td>
<td>Traditional procurement systems</td>
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<td></td>
<td>Fragmented and project-based industry</td>
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<tr>
<td>To adhere</td>
<td>Let others do it</td>
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<tr>
<td>to regulation &amp; building codes</td>
<td>Prefer traditional &amp; professional trade</td>
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<tr>
<td>Owner with entrepreneurial approach &amp; ambitions</td>
<td>Firm owners with lifestyle approach (Barbie, Boat, etc).</td>
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<tr>
<td>Taking a more holistic approach</td>
<td>Busy in daily business; profits are OK.</td>
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<tr>
<td>Informed clients &amp; hence main contractors</td>
<td>Management or employees don’t want it</td>
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<tr>
<td>Companies want standardised &amp; industrialised production</td>
<td>Too much effort needed in managing (influencing) stakeholders and customers</td>
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Sources: eg BRANZ reports; Accenture; Manley/Hardie (BRITE); Whyte & Sexton; Zortea; Vrijhoef/Bossink; Hinton; Sheffer; Abbott & Jeong.
Conceptual framework

1. Procurement activities
   - Specification
   - Selection
   - Negotiation & Contracting
   - Supplier Rel. Mgmt.

2. Innovation activities
   - Ideation
   - Concept
   - Product Development
   - Pilot Market Testing
   - Full adoption

3. NZ Construction industry (supplier) environment

4. Non-incremental sustainable technology innovations

5. Small NZ entrepreneurial construction firm & owner characteristics

6. Small NZ entrepreneurial construction firm: strategy & business model

7. Procurement Performance
   - Pr7
   - Pr8
   - Pr9
   - Pr10

8. Innovation Performance

9. Firm Performance
   - Customer & supplier results
   - Societal results
   - Employee results
   - Business results.

So .. *procurement & innovation* activities

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Specify wants or needs</th>
<th>Scout &amp; Select supplier</th>
<th>Negotiate a contract</th>
<th>Manage relation with supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideation</td>
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<tr>
<td>Concept</td>
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<tr>
<td>Develop product</td>
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<tr>
<td>First use in market</td>
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<tr>
<td>Full use in market</td>
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</table>

**Simple working model:** what activities do we see in each cell? How are they affected by internal & external variables?

Research plan & methods

The literature review is ongoing and will be used in all steps.
(Could also include AR-CS, survey, longitude-CS).

Design of 2nd field research & 3rd round of RWC / focus depends on outcomes earlier steps.

mostly deductive
mostly inductive
both inductive & deductive

Lit. Review → Exploring interviews → 1st round of RWC / focus study → 1st round of case study → amended conceptual models with hypotheses on dominant variables building theory

1st conc. model & hypotheses on dominant variables building theory

2nd round of RWC / focus study → 2nd round of case study → amended conceptual models with hypotheses on dominant variables testing theory

3rd round of RWC / focus

Write & conclude research

FEB 15
JUN 15
NOV 14
AUG 16
FEB 15
JUN 15
NOV 14
AUG 16
Empirical data will mainly be developed with

**Focus groups with experts & entrepreneurs:**
- Sustainability, innovation, business development experts (from academia / consultancy / government)
- Industry representatives
- Participating or interested entrepreneurs (see below)
- Potential lead customers (Procurement / Engineering).

**Case studies in small entrepreneurial firms:**
- Combine innovation & procurement ($) activities
- Potential change in concepts a/o linkages (cf Hardie)
- Green technology value proposition to customers (cf T&W)
- Entrepreneurial (cf Zortea) organization of > 5 employees
- Known to the industry; (Potential) Intellectual Property.

Research benefits

- Better understanding of interaction procurement vs innovation activities.
- Higher success rates for non-incremental sustainable technology innovations.
- More and better subsequent process innovations.

- Success for entrepreneurial firms & their business partners;
- Beneficial to owners & occupants; to employees;
- Beneficial to society & environment.

What I need ...

- Experts & firms for exploring interviews
- Experts & firms for the focus groups
- Small entrepreneurial firms for case studies.

*Staal, A. (2014), Acquiring radical green innovations for NZ construction, presented at the 4th New Zealand Built Environment Research Symposium (NZBERS), 14 November, Massey University, Albany campus.*
...THANK YOU...

Your questions & remarks are highly appreciated
(Please take one of my business cards)

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REFERENCES


Schiele, H. (2010). Unveiling the importance of being a preferred customer in order to develop innovations with suppliers. Twente Technical University, the Netherlands.


# Publications & Presentations

<table>
<thead>
<tr>
<th>Current publications &amp; presentations</th>
<th>Date &amp; co-authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do small firms (small firms) purchase innovations?</td>
<td>MAY 2012</td>
</tr>
<tr>
<td>(Presentation IFPSM PhD Summer School Salzburg).</td>
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<tr>
<td>Improving Purchasing Performance in small firms.</td>
<td>MAY 2013</td>
</tr>
<tr>
<td>(Research Plan commissioned by NEVI)</td>
<td>G. Hagelaar; A Staal; G. Walhof; R. Holman.</td>
</tr>
<tr>
<td>(Presented as competitive paper at IPSERA Conference; submitted on invitation for shortlist to Journal of Purchasing &amp; Supply Management.</td>
<td>G. Hagelaar; A Staal (corresponding author); R Holman; G. Walhof. Winning papers will be published in Journal of Purchasing &amp; Supply Management (C-ranked).</td>
</tr>
<tr>
<td>How do New Zealand construction SMEs procure non-incremental sustainable innovations?</td>
<td>April 2014</td>
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<tr>
<td>(Doctoral workshop at IPSERA in South Africa.)</td>
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<tr>
<td><a href="http://procurementgreeninnovationsphd.blogspot.co.nz/">http://procurementgreeninnovationsphd.blogspot.co.nz/</a></td>
<td>From NOV 2013; 800 views.</td>
</tr>
<tr>
<td>Basic PhD weblog for practitioners and academics.</td>
<td>(Also some views on my linkedin profile)</td>
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<tr>
<td>Entrepreneurial small New Zealand construction firms acquiring non-incremental sustainable technology innovations.</td>
<td>SEP 2014</td>
</tr>
<tr>
<td>Accepted with double blind peer review as paper for 2015 ACERE conference, Australia.</td>
<td></td>
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<tr>
<td>The nature of embedded purchasing activities in SMEs – results from a Dutch case study.</td>
<td>NOV 2014</td>
</tr>
<tr>
<td>(Submitted as competitive paper to IPSERA 2015)</td>
<td>G. Hagelaar; A Staal (corresponding author); R Holman; G. Walhof.</td>
</tr>
<tr>
<td>At first sight – Students’ Case study within 4 Dutch small firms.</td>
<td>JAN 2015</td>
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<tr>
<td>A Staal, G. Walhof (Work in Progress)</td>
<td></td>
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<tr>
<td>Macro &amp; Meso NZ construction Environmmt (6)</td>
<td>Features Non-incremental &amp; Green Innovations (7)</td>
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<tr>
<td>--------------------------------------------</td>
<td>-----------------------------------------------</td>
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<tr>
<td>1. Market conditions related to Boom – Bust cycle (Branz); Stranded capital (Sheffer)</td>
<td>1. (Non)-Patented (Intangible assets or not; license /support) (Manley 2005; others)</td>
</tr>
<tr>
<td>2. <strong>Building Code Regulation</strong> (Manley);</td>
<td>2. New to world – new to country / to industry (or to users)</td>
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<tr>
<td>3. Industry initiatives / power</td>
<td>3. Innovation phase (Cooper) when <strong>acquired</strong>; Diffusion (stages Rogers/Brown).</td>
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<td>4. Sustainability Regulations Demands of stakeholders/clients (Hardie 2011, 2013)</td>
<td>4. Incremental or disruptive (radical) to industry (users)</td>
</tr>
<tr>
<td>5. Gov. Type of Constr Supply Chain (cf Hagelaar/Staal).</td>
<td>5. On costs (efficiency) or on quality (functionality of users)</td>
</tr>
<tr>
<td>6. Support from <strong>Network</strong> (not the chain itself)</td>
<td>6. Process or product or system innovation (for MC and users)</td>
</tr>
<tr>
<td>7. Complexity of network relations (PhD Adams)</td>
<td>7. A one – off, or serial innovations (Gambatese)</td>
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<tr>
<td>8. Procurement system; Alliances /ST adverse relationships (Kaats, Bygballe, others)</td>
<td>8. short /long-term innovation supplier relation (PhD van Echtelt 2004)</td>
</tr>
<tr>
<td>9. Negotiation Power in chain (Porter, Kraljics, Carter?)</td>
<td>9. <strong>Green aspect easily demonstrated to stakeholders</strong> (PhD Bos?)</td>
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<tr>
<td>10. % of new customers / suppliers (products) last three years (source??)</td>
<td>10. Technological and economic uncertainty (PhD Melander; Fisher?)</td>
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<td>11. Sector differences? (Morrissey)</td>
<td>11. <strong>Current or New suppliers</strong> (Domestic / Foreign; Schiele, Jensen. …)</td>
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<tr>
<td>12. Supplier Involvement versus Development Risk;(PhD Wynstra 1998)</td>
<td>12. On the adoption or benefits of open innovation (Schroll; Knudsen; Jean)</td>
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<tr>
<td>13. On <strong>partnering</strong> in construction (Bygalle) Negative Effects Customers (Gassmann)</td>
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<tr>
<td>14. Open versus closed innovation model (Chessbrough, others on small firms!)</td>
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<tr>
<td>Small firm &amp; Owner Characteristics (8)</td>
<td>Small Constr Firm Bus Model (9)</td>
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<tr>
<td>1. small firm structure &amp; mgmt (departments or not, etc Meijaard)</td>
<td>1. Owner Ambition &amp; Motives: Entrepreneur, lifestyle, survivor (Morrissey 2011)</td>
</tr>
<tr>
<td>2. procurement department or not (Morrissey 2004; James, 2011); Is procurement strategic in spend, or goods/services or SRM not (James, 2011; Pressey 2009)</td>
<td>2. Treacy &amp;Wiersema (1997; PL, CI, OE);</td>
</tr>
<tr>
<td>3. More a Service or a Manufacturing small firm (James, 2011)</td>
<td>3. Ansoff on growth; Davidsson 2007 on small firm growth</td>
</tr>
<tr>
<td>4. Size (&amp; turnover (Paik); work experience &amp; education of team (Krisnan)</td>
<td>4. <strong>Verreynne</strong> (2007, 2011?) on 4 types of small firm strategy.</td>
</tr>
<tr>
<td>5. Past innovation successes (see …); training &amp; learning important (James)</td>
<td>5. See Zortea on BuMo (<strong>Entrepreneur</strong> vs only Marketing oriented).</td>
</tr>
<tr>
<td>6. Owner holistic, or traditional on buying (Pressey) priority (Ellegaard/Quayle)</td>
<td>6. Formulated procurement strategies (James, 2011; Abbott 2006) or Innovation (…)</td>
</tr>
<tr>
<td>7. Mature small firm vs startup (Verreynne, and ….)</td>
<td>7. Active SCM involvement or not (Brau); Open vs closed innovation</td>
</tr>
<tr>
<td>8. small firm Ownership (family, SBU, venture capital; sole ownership; source?)</td>
<td>8. Attitude to innovation, change (Songip – Brown)</td>
</tr>
<tr>
<td>9. Apt to chance (Bossink 2004??); <strong>innovative culture</strong> (Songip 2013)</td>
<td>9. Decision making processes</td>
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