Principles for Innovation Impact Assessment

24 October 2013
Presentation Approach

Part 1: The Evidence Network
Part 2: The State-of-the-Art
Part 3: Principles to underpin practitioners’ approaches to innovation impact assessment
Part 4: Implementing the principles: The Evidence Network’s methodology
The Evidence Network

- TEN is an independent third-party assessment firm
- Customers in Canada, U.S., Europe, and Asia
- We focus exclusively on impact assessments of organizations and programs that support business innovation
- Our methodology* is based upon an in-depth understanding of innovation and has been reduced to practice
- Recognized by Center for American Progress, Council of Canadian Academies, marquee customers, and others

The Evidence Network -
Our Motivation – the Beginnings

Milestones:
How the Alberta Research Council contributes to the economy of the province.

February 1993
Part 2: The State-of-the-Art
So What is the State of Impact Assessment?

- Research is highly developed for assessments of the impacts of research and innovation
- Literature review* identifies 243 models using 36 different measures for 50 studies published between 2000-2012
- 64% report positive impact
- Council of Canadian Academies documents the most recent methods for evaluation and monitoring (including innovation intermediaries)
- TEN has reduced to practice a systematic and standardizable means to assess the impact of innovation intermediaries

* Dalziel, M., Tahmina, T.N., & Zhao, X. 2013. The impact of investments in research and innovation: A literature review. DRUID (Danish Research Institute for Industrial Dynamics) Summer Conference, Barcelona, Spain, June.
Issue: Robustness vs. Data Collection

## Comparisons of Measurement Methodologies

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Causality</th>
<th>Data Requirements</th>
<th>Time Period</th>
<th>Plurality of Impacts</th>
<th>Based on an Innovation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case studies</td>
<td>Low</td>
<td>Variable</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Scorecards and benchmarking</td>
<td>Moderate</td>
<td>Short term</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Indicator-based frameworks</td>
<td>Moderate</td>
<td>Short term</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>General econometric approaches (CDM and growth accounting)</td>
<td>✓</td>
<td>High</td>
<td>Long term</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference-in-difference estimation</td>
<td>✓</td>
<td>High</td>
<td>Long term</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Matching estimation</td>
<td>✓</td>
<td>High</td>
<td>Long term</td>
<td></td>
<td>✓</td>
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<tr>
<td>Regression discontinuity design</td>
<td>✓</td>
<td>High</td>
<td>Long term</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Random field experiments</td>
<td>✓</td>
<td>Very high</td>
<td>Long term</td>
<td></td>
<td></td>
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</tbody>
</table>

The Choice: Monitoring vs. Evaluation

• “...If the goal of measurement is to produce estimates of short-term impacts, the best source of data is a properly designed client-based survey that minimizes the subjectivity of responses”

• “...the usefulness of the sophisticated best practice econometric approaches to program evaluation is sometimes limited by lack of data”

Recommendation 1:
Carefully define the purposes of assessments to guide their design, with sensitivity to different stakeholder needs.

Part 2: Principles to underpin practitioners’ approaches to innovation impact assessment
De-Mystifying ‘Metrics’ – How to Think about a Metrics Discussion

• Don’t think about metrics!
• Think about the information you need to lead, manage, report, etc. on your mission

Recommendation 2: Clearly distinguish the target(s) of interventions.

Make sure you get where you're going. The Evidence Network provides you with impact information you need to support thriving companies.
Uses of Impact Assessments

To provide information for:

• Funding decisions
• Communications to stakeholders
• Reports to Board
• Accountability to government
• Project and organizational management
• Employee motivation
• Input to strategy
• Monitoring impacts of innovation investments in others
• Organizational learning – e.g. best practices

Impact assessment approaches, and measures, must respond to information needs
The Role of Aggregated Metrics

Recommendation 3: Design with data uses and impact aggregation as priorities.
Multi-dimensional Measurement Challenge

- Assessments describing innovation impacts are complex and multi-dimensional – there’s no escaping this fact!

Recommendation 4:
Use multiple assessment dimensions to strengthen assessment design.

One instrument – we’re doomed....

Multiple instruments lead us to our destination with confidence.
Other Determinants of Impact Assessment Approach

• Types of companies supported
  – AITF: *Fostering the development and growth of new and existing industries*

• Type of Support
  – AITF: *Supporting a balanced long-term program of research and innovation directed to the discovery of new knowledge and the application of that knowledge to improve the quality of life of Albertans*

• Organizational improvement imperatives
  – Use impact effectiveness to inform change
BUFFALO, N.Y. – The University at Buffalo Technology Incubator has been named the world’s top life sciences university incubator by the University Business Incubator (UBI) Index, a Stockholm-based startup that provides expertise in starting and transforming incubators.

The incubator currently houses 13 companies. Since its inception in 1988, the facility has assisted more than 100 tenants and graduates, with 84 percent of those firms surviving for five or more years, according to the latest data available.

EDMONTON - Business incubator TEC Edmonton says a new survey suggests entrepreneurs who use its services grow faster and survive longer than those that don’t.

TEC's 106 client companies generated $103 million in revenue, up 25 per cent from the previous year, according to the incubator's 2012 economic outcomes survey, released Thursday. That compares to an average 10-per-cent growth rate for early-stage ventures reported by Industry Canada.
Attributed Impact - SRC

ECONOMIC IMPACT

Since 2003, SRC contributed to more than $5.1 billion in economic and employment impacts in Saskatchewan.

For every dollar the province invested in SRC in the past year, our work contributed to at least a $29 return. That translated into $559 million in direct economic impacts for Saskatchewan.

We assisted in creating or maintaining more than 2,701 Saskatchewan jobs with an economic impact of more than $169 million.

$5.1B
$5.1 billion in economic and employment impacts in Saskatchewan since 2003.

$559M
Our annual economic impact assessment shows that our work contributed to $559 million in direct economic impacts for Saskatchewan.

2,701
SRC assisted in creating or maintaining more than 2,701 Saskatchewan jobs in 2012-13 valued at more than $169 million.

29
For every dollar the province invested in SRC, SRC’s work contributed at least a $29 return to the growth of the Saskatchewan economy.

$36M
Projects focused on or containing a substantial component of achieving positive environmental or social impacts is valued at $36 million.

22,000
SRC participated in projects that resulted in greenhouse gas reductions of more than 22,000 tonnes and energy savings equivalent to more than 44 million kW/h/year in 2012-13.
Recommendation 5: Takes steps to identify attributable impacts from companies
Part 3: Implementing the principles: The Evidence Network’s methodology
How RTO’s Impact Firms

RTO

Mission

Services

Client or Member Firm

Indirect impact on firm performance

Direct impact on firm resources and capabilities

Recommendation 6: Invoke knowledge of intermediation processes to strengthen assessment designs.
Benchmarking Degree of Impact

Average Direct Impact

Average Indirect Impact
Recommendation 7: Design with benchmarking and generalizability in mind.
Which Organization Performs the Best?

Impact on Company Revenues (SM)

Company Growth | Export Stimulation | Incubation

Benefit/Cost

Company Growth | Export Stimulation | Incubation
Which Organization Performs the Best?

Direct impact on companies’ resources and capabilities links RTO activities to improved company performance.
TEN’s Impact Assessment Methodology

**Assessment Dimensions**

**Recommendation 8:**
Do recurring assessments using methodologies that are systematic, practical, and standardizable.
Direct Impact – Measures
Client ‘C’
UCLA Global Access Program - Average Direct Impact (Measures)

61% of companies’ annual revenues (2010) > € 2 million
Attributed Impact on Revenues – From 20/80 to 90/10!
Our findings show that to date, the Global Access Program has contributed a total of approximately €20.5 million to Finnish GDP, and 143 jobs. Benefit/Cost: 17:1

See Tekes Video: [http://www.youtube.com/watch?v=Jlri8fCaYLI](http://www.youtube.com/watch?v=Jlri8fCaYLI)
Enabling Best Practices – Client ‘n’

Use of Services
- Information services
  - Information or member services
  - Mentoring and consulting
- Development services
  - Technology projects
  - HQP development

Direct Impact
- Expertise and funding
  - Business expertise
  - Technology planning
  - Technology expertise
  - Technology development
  - Go-to-market expertise
  - Funding

Indirect Impact
- Change in revenues
- Change in employment
- New customers

Recommendation 9:
Adopt approaches with the greatest potential to establish causality.
Typical Findings

• On the use of intermediary services:
  - Impacts on companies increase with increased intensity of use of intermediary services
  - Impacts on companies vary with service types, availability of funding, and company size, age, industrial sector, research intensity, etc.

• Impact on companies’ resources and capabilities, and market performance
  - Attributed impact on resources and capabilities of companies is usually greater than impact on market performance (causality is more direct)
  - Attributed impact on resources and capabilities of companies is the best predictor of market impact (predicted by logic model)

• Companies and intermediaries make strategic decisions based upon the impact being effected
Conclusion

- Impact assessment methods are sophisticated, under-utilized, yet increasingly required
- Recommendations – Address:
  - Purpose and use
  - Data aggregation for different audiences
  - Need to focus on attribution
  - Multiple dimensions of impact
  - Clarity on impact targets (companies)
  - Leveraging knowledge of innovation processes
  - Benchmarking
  - Methods that enable best practices
- The challenge is in reducing known methods to practice for systematic and standardizable use

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"TEN’s assessment was comprehensive and well executed. The President of the Science Park took great interest in the report as it helped us to focus on improvements to the services we offer."

Mingguo Shao
Director
Zhejiang University Science Park

"TEN’s approach to impact assessment is a significant advance on past approaches employed here at Tekes and elsewhere."

Dr. Raine Hermans
Director, Strategic Intelligence
Tekes

"The Evidence Network’s assessment of the impact of innovation intermediaries on firms is the best work I’ve seen done in this area. They are succeeding in doing what others have only talked about."

Dr. Tom Brzustowski
former Royal Bank of Canada Financial Group;
Professorship in the Commercialization of Innovation; former President of the Natural Sciences and Engineering Research Council of Canada
"The impact assessment performed by The Evidence Network (TEN) was complete, analytically solid and statistically-supported. Using a rigorous methodology and highly effective approach, TEN provided key insights that will enable us to build on program elements that have the greatest impact on corporate performance. This information will be particularly useful when we introduce the program to firms in other countries."

Bob Foster
Director, Global Access Program
Adjunct Professor, Technology Management
UCLA Anderson School of Management

"CITRIS works closely with industry and government agencies to turn technology into solutions for societal challenges. Drawing on its sound methodology and knowledge of research and innovation processes, and working collaboratively with our team, TEN assessed CITRIS’ impact on companies. Results confirm that we are fulfilling a critical part of our mission, catalyzing the development of groundbreaking new technologies, companies and industries."

Professor Paul Wright
Director, CITRIS
University of California
"TTBE at uOttawa have been impressed by the tools that The Evidence Network (TEN) has developed to assess an organization’s impact on innovation. Our pilot study provided an analysis that was very beneficial and insightful...TTBE will continue to work with TEN to further assess the efficacy of our services on our company clients."

D. Joe Irvine
Director
Technology Transfer and Business Enterprise
University of Ottawa

"Communitech’s mission is to help technology companies start, grow, and succeed. The Evidence Network (TEN) helped us to assess our impact on technology companies, giving us insight into how we can serve companies better. The research from TEN will enrich our annual planning process in helping to further increase our impact on the tech ecosystem."

Iain Klugman
President and CEO
Communitech