INNOVATIONS FOR MANAGING DISASTER RISK

Ranit Chatterjee, PhD
Kyoto University
What is innovation

Innovation is new knowledge incorporated in products, processes, and services

Is systemic in nature and cross-functional, leads to a change in all or some elements of the system breaking the status quo

Necessity is the mother of invention

Source: Afuah, 1998; Kogabayev and Maziliauskas, 2017
Innovation in Global Policies

• The Hyogo Framework for action 2005-2015 laid emphasis on “use of knowledge, innovation and education for building a culture of safety and resilience at all levels”

• The Sendai Framework for Disaster Risk Reduction 2015-30 further reinforces the use of innovation and S&T for better understanding of risk and addressing gaps, social challenges, disaster risks.

• Further, SFDRR calls for increased investment and enhanced access to innovation and technology
Linking Science, Technology and Innovation

<table>
<thead>
<tr>
<th>Science</th>
<th>Technology</th>
<th>Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Problem, method</td>
<td>• Platform, enabler</td>
<td>• Idea, Knowledge</td>
</tr>
<tr>
<td>• Generate evidences</td>
<td></td>
<td>• Customisation</td>
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</tbody>
</table>
Realm of application

<table>
<thead>
<tr>
<th>Long term</th>
<th>Short term</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EXPLOITING A MARKET CHANGE</td>
<td></td>
</tr>
<tr>
<td>Meeting permanent changes in customer behavior in currently served markets</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td></td>
</tr>
<tr>
<td>4. ENVISIONING A FUTURE MARKET</td>
<td></td>
</tr>
<tr>
<td>Building a potential for a future market based on changes in customer behavior</td>
<td></td>
</tr>
<tr>
<td>3. EXPLOITING AN EMERGED MARKET</td>
<td></td>
</tr>
<tr>
<td>Switching to a market that has emerged due to emerged customer concerns</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
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<tr>
<td>59</td>
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</tbody>
</table>

Observed impacts

Percieved impacts

Indirect application

Future impacts

Mainstream into pre Covid-19 themes

Time

Source: Heinonen and Strandvik, 2020
Disaster as an enabler for innovation ecosystem
Benefits of innovation

- Low cost
- Allows co-creation
- Create Livelihood
- Reduced time
- Collaboration and partnership
- Business opportunity
DOST model for innovation

Source: Adam Kucharski, Nekkei Asia, 2020
Case Study
The Pandemic has huge impact on the economy

The SMEs are the worst affected

Many SMEs donot make BCPs

Not all BCPs include pandemic risk

Data gap and lack of baseline

SMEs- Small and Micro Enterprises
Need For A Comprehensive Tool

1. Reactive to proactive approach

2. Support decision making through evidences

3. Communicate risk to wider audience
Design Considerations

1. Ease of Use
2. Scientific
3. Data privacy
4. Adaptable
5. Scalable
This tool is intended to help micro, small and medium-sized enterprises, especially in the informal sector, to develop a basic understanding of their level of risk and is meant to be one tool among many to help enterprise/business owners understand their risk levels & build their resilience.

Quick Risk Estimation (QRE) Tool
For Micro, Small and Medium-sized Enterprises (MSMEs)

In partnership with

[Links to UN Office for Disaster Risk Reduction (UNDRR), COVID-19 Response, Quick Risk Estimation Tool, and Asian Disaster Preparedness Center (ADPC) websites]

www.businessqre.net
Conceptual framework

Exposure to Other Hazards

Covid 19 Pandemic & Internal Process of Business

Technology/Innovation

Human Resource

Internal process

Finance

Operation

Government Regulations

Change in Market
How the QRE Tool works

1. 30 Questions
2. Weighted Mean
3. Risk level
4. Advisory
5. Data base
Result Dashboard

Risk around you (This is based on your current location)

Advice

- **Low Risk**: It is unlikely that the normal business operations would have any serious impact but a close monitoring of the changing situation is needed.

- The risk is high in **Operations**, **Exposure to Other Hazards** (The closer the score is to the redline, the higher the risk. The closer the score is to the greenline, the lower the risk).

Some suggestive tools to help reduce business risk and increase resilience are listed below.

- For continuity of the business and planning for recovery, you are encouraged to refer to the Business Continuity and Recovery Planning Toolkit: [www.undrr.org/bcp-ap](http://www.undrr.org/bcp-ap)

- An online e-learning orientation course has been developed to assist businesses to use the COVID-19 Toolkit. It can be accessed at: [https://courses.adpc.net/courses/course-v1:UNDRR+COVID19SBCR+2020/about](https://courses.adpc.net/courses/course-v1:UNDRR+COVID19SBCR+2020/about)
Thank you

E: ranit13@gmail.com
APRU Multi-Hazards Webinar Series: A New Approach for Disaster Risk Management after COVID-19

Session III:

Developing Innovative Tools and Approaches for Disaster Preparedness and Response

by Isroil Samihardjo
Session I: Understanding and Addressing Different Types of Hazard Risks

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<tr>
<th>Preparedness</th>
<th>Disaster Response</th>
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<tr>
<td>Before ←</td>
<td>After</td>
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Preparedness

Before

→ After

Disaster

Response

Recovery Other?

Mitigation

Need to be considered:
• Steps
• Threat and Risk Assessment (TARA)
• Organisations
• Human Resources
• Equipment and Facilities
• etc

WHO UNDRR?

Indonesian National Commission on Zoonosis / Komnas Zoonosis (†2016)

Indonesian National Commission on Infectious, Emerging, and Reemerging Disease / Komnas Pinere (†2016)

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Need to be considered:
• Steps
• Threat and Risk Assessment (TARA)
• Organisations
• Human Resources
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• etc

Steps:
• Early Detection
  (observation, monitoring, surveillance, recognition, reconnaissance, identification, detection, investigation)
• Early Warning
• Anticipation
• Be prepared

TARA:
• Deliberate vs Undeliberate Actions
• Source of threats (internal, external)
Need to be considered:

- Steps
- Threat and Risk Assessment (TARA)
- Organisations
- Human Resources
- Equipment and Facilities
- etc

Steps:

- Distinguish between detection and search
- Specify subjects or objects to be detected for preparedness

TARA:

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A New Approach for Disaster Risk Management after COVID-19

Early Detection (observation, monitoring, surveillance, recognition, reconnaissance, identification, detection, investigation)

Early Warning

Anticipation

Be prepared
Steps:

• Early Detection
  (observation, monitoring, surveillance, recognition, reconnaissance, identification, detection, investigation)

• Early Warning

• Anticipation

• Be prepared

Distinguish between prevention, counter measures and protection

Raising Awareness

Foresight → Forecasting → Prediction → Estimation → Anticipation

TARA:

• Deliberate vs Undeliberate Actions

• Source of threats
  (internal, external)

Threat = I x C x O + V

• Regulation, Legislation, CoC for Scientist, Safety Culture, etc.
Preparedness

Steps:

• Early Detection (observation, monitoring, surveillance, recognition, reconnaissance, identification, investigation)

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• Anticipation

• Be prepared

Threat = I x C x O + V

TARA:

• Deliberate vs Undeliberate Actions

• Source of threats (internal, external)

Detection = the action or process of identifying the presence of something concealed

Search = finding, seeking or looking carefully for identified object

Distinguish between detection and search

Specify subjects or objects to be detected for preparedness

Raising Awareness

Foresight → Forecasting → Prediction →

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### A New Approach for Disaster Risk Management after COVID-19

- Distinguish between detection and search
- Specify subjects or objects to be detected for preparadness

- Raising Awareness

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<tr>
<td>Wuhan</td>
</tr>
<tr>
<td>airborne transmitted</td>
</tr>
<tr>
<td>infectious disease</td>
</tr>
<tr>
<td>The rest ?</td>
</tr>
<tr>
<td>droplets</td>
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Threat = T x C x O + V

- Lockdown
- social distancing, hand wash, mask

- Regulation, Legislation, CoC for Scientist, Safety Culture, etc.
Preparedness

Steps:
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Regulation, Legislation, CoC for Scientist, Safety Culture, etc.

A New Approach for Disaster Risk Management after COVID-19

Foresight $\rightarrow$ Forecasting $\rightarrow$ Prediction $\rightarrow$ Estimation $\rightarrow$ Anticipation

Accuracy $\uparrow$

Estimation $\downarrow$

Prediction

Forecasting

Foresight

Time $\rightarrow$
Preparedness

Steps:
• Early Detection (observation, monitoring, surveillance, recognition, reconnaissance, identification, detection, investigation)
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• Anticipation

Be prepared

TARA:
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• Distinguish between detection and search
• Specify subjects or objects to be detected for preparedness
• Raising Awareness
• Foresight → Forecasting → Prediction → Estimation → Anticipation

• Distinguish between prevention, counter measures and protection

• Threat = I x C x O + V
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Preparedness

Steps:
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• Regulation, Legislation, CoC for Scientists, Safety Culture, etc.
Preparedness can be done by defining and considering comprehensively the sequential steps, analysing risks and threats, developing coordination body, interdisciplinary human resources and maintaining the availability of facility and equipment.

Preparedness of the disaster handling should include advance system for early detection, early warning, anticipation, prevention, counter measure, and protection.

Due to the dual use characteristic of CBRN, the risk and threat analyses should include the possibility of natural and unnatural disaster.
Summarizing the discussion, perspective & structure

Culture
- Awaraness
- **Decision making**
- Coordination
- Resources

- Assessment
- Mitigation
- Preparedness
- Detection
- Response
- Lessons learnt
- Improvement

Harnessing the power of innovation

Jere Peltonen