

An exploration of  
the Mexican frugal  
innovation  
landscape

Una exploración del  
panorama  
mexicano de la  
innovación frugal

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# Abstract

Frugal innovation has received increasing academic attention this past decade as a form of innovation that reduces costs without compromising on quality, focussing on core performance. These attributes make frugal innovations well adapted to addressing Sustainability Development Goals (SDGs), in particular in emerging economy contexts. The concept in itself has been related to other forms of innovation (e.g., Jugaad innovation, Resource-constrained innovation, bricolage) and distinguishing it more clearly from these remains at task (Weyrauch and Herstatt 2016). There is a multiplicity of initiatives in Mexico which seek to address SDG-related issues in areas as diverse as food security, water management or improving living conditions, which could fall under the frugal innovation conceptualization. This paper seeks to enrich the ongoing development of the frugal innovation concept, which remains fuzzy, by applying it to the Mexican context in both urban and rural settings. As an exploration of the landscape of Mexican potential frugal innovations, the identified applications are diverse, but the research puts focus in particular on the potential of frugal innovations for agri-food, environmental management and climate change mitigation

# Resumen

La innovación frugal ha recibido gran atención por parte de la comunidad científica en la última década, se destaca como una forma de innovación que reduce costos sin comprometer calidad centrándose en la eficiencia. Dichos atributos hacen que las innovaciones frugales sean candidatas a soluciones para abordar los Objetivos de Desarrollo Sostenible (ODS), en particular en contextos de economías emergentes. El concepto en sí mismo se ha relacionado con otras formas de innovación (p. ej., innovación Jugaad, innovación con recursos limitados - grassroots, o bricolaje) y aunque la literatura existente permite varios ámbitos de conceptualización (Weyrauch y Herstatt 2016) las exploraciones en el caso mexicano son aún limitadas. Existe una multiplicidad de iniciativas en México que buscan abordar temas relacionados con los ODS en áreas tan diversas como la seguridad alimentaria, la gestión del agua o la mejora de las condiciones de vida, que podrían caer bajo la conceptualización de innovación frugal. Esta presentación busca enriquecer el desarrollo en curso del concepto de innovación frugal, que sigue siendo confuso, aplicándolo al contexto mexicano tanto en entornos urbanos como rurales. Como una exploración del panorama de las posibles innovaciones frugales mexicanas, las aplicaciones identificadas son diversas, pero la investigación se enfoca en particular en el potencial de las innovaciones frugales para la agroalimentación, la gestión ambiental y la mitigación del cambio climático.

# A definition for frugal innovation

- They are good enough innovations\* that represent a technical and market novelty
- Frugal innovations are developed in the context of scarcity. Doing more with less
- They are cost-effective and user-friendly
- Jugaad – quick fix – literally collection of, or obtaining something through search and effort

- Son innovaciones \* “suficientemente buenas” que representan una novedad técnica y de mercado.
- Las innovaciones frugales se desarrollan en un contexto de escasez (relativo). Hacer más con menos
- Son rentables y fáciles de usar.
- Jugaad - solución rápida - literalmente colección u obtención de algo a través de la búsqueda y el esfuerzo

*Bhaduri, Saradindu. (2015). Radjou et al. (2015) Hossain (2018) Seeman et al. (2021)*

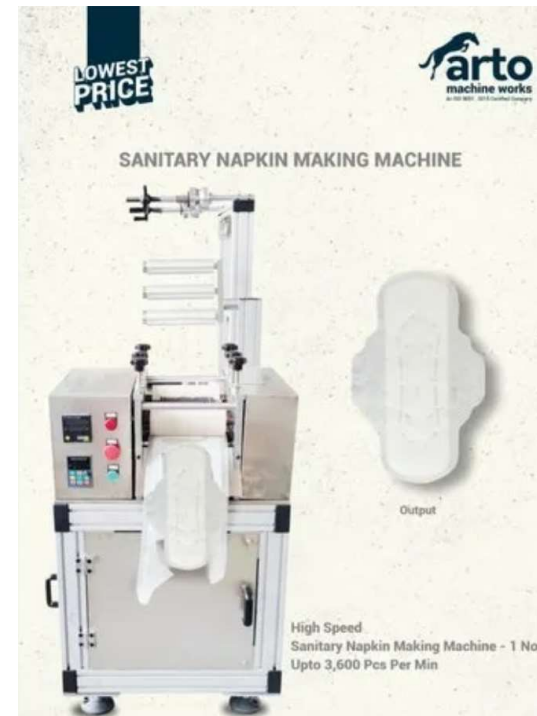
\*Innovation: an interactive, complex and dynamic process consisting of an invention – development and implementation phase. Garud et al. (2013)

\*Innovación: proceso interactivo, complejo y dinámico que consta de una fase de invención – desarrollo e implementación. Garud et al. (2013)

# Exemples

a [floating cycle](#) to rejuvenate water bodies

Sanitary napkin machine Tamil Nadu



# Exemples

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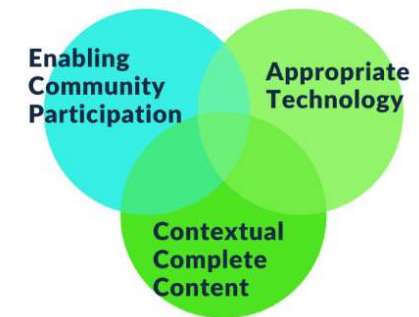
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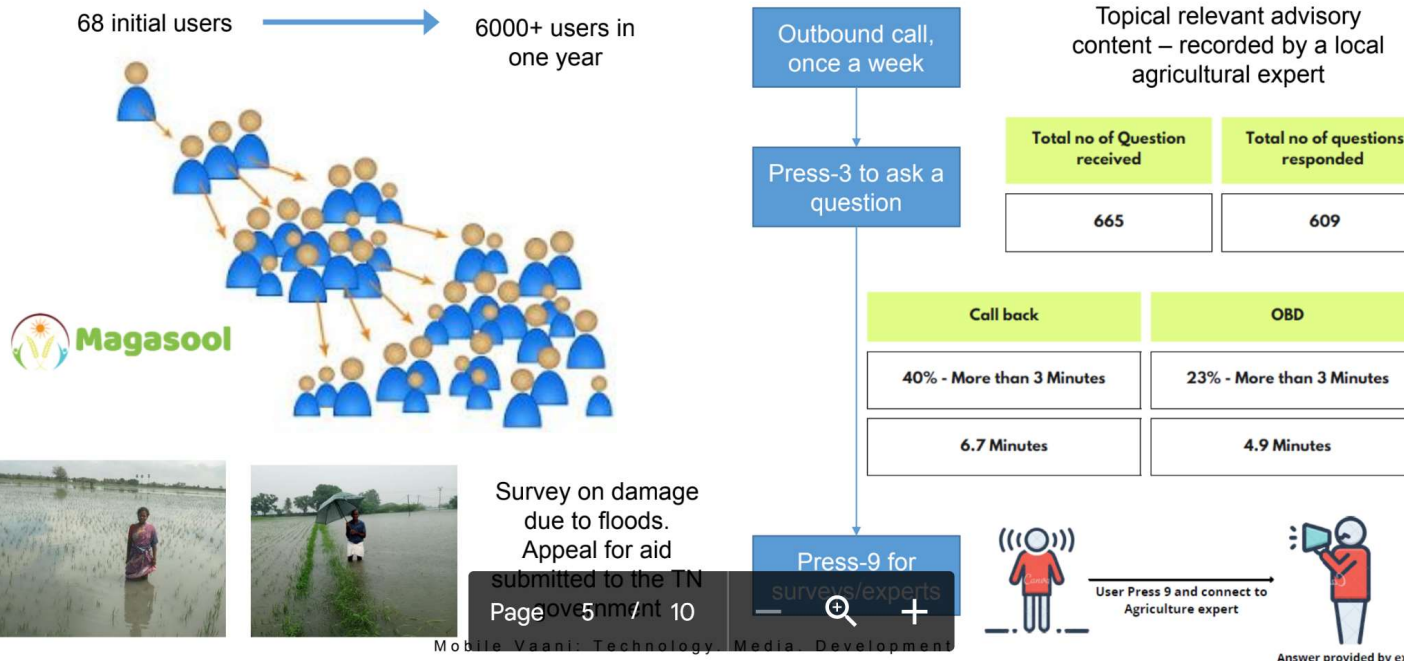
Our detailed analytics on users consumption patterns and opportunities offer businesses and social entrepreneurs insights into rural India.



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## Magasool case study: Uzhavar Sakthi IVR platform





Cholula, México

7-10 december 2022

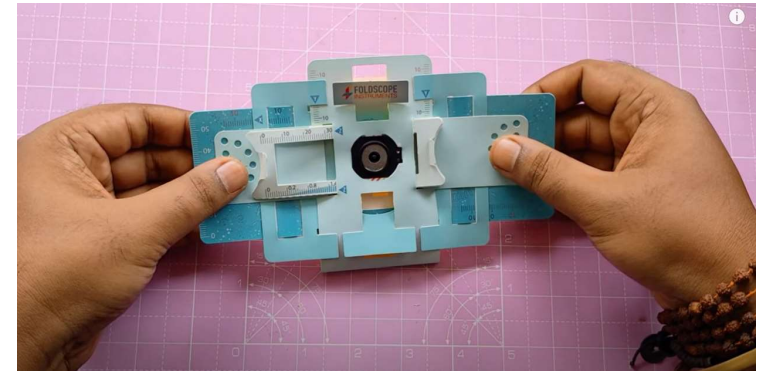


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REENCUENTRO • RECUPERACIÓN • RECONFIGURACIÓN  
Reencontro • Recuperação • Reconfiguração

# From edible containers to microscopes

Origami microscopes – less than 2 USD

<https://www.youtube.com/watch?v=UrYrhbd0aal>



# Other forms of informal innovation processes

*Jugaad, frugal engineering, resource-constrained innovation, Gandhian innovation, catalytic innovation, inclusive innovation, indigenous innovation, bop innovation, low-cost, BoP innovation, disruptive innovation, intersection, trickle up innovation, reverse innovation....*

*Semantic analysis, 179 articles. RCI  
characteristics (Seeman et al., 2021)*

## Grassroots innovation – policy

- Social issues (movement 70%, social 29%, community 44%, inclusion 54%), environmental (sustainability 35%), political (policy 48%, political 57%), and transformative (transformation 55%) dimensions
- Vocabulary referring to the rural (55%) context (farm (68%), village 69%, agriculture 63%, and land 74%), its organization (cooperative 84%, family 64%), and agricultural products (dairy 88%, cotton 88%, milk 78%). These innovations are developed within funded (fund 62%, loan 94%), programs (57%) or projects (40%), are collaborative projects (member 51% of a group 41%) a

## Bricolage – improvisation

- Lack of capital to start the business, availability of affordable business facilities, competition/market conditions, employees with sufficient skills, government regulation, limited raw materials, self-doubt, and inexperience about business and marketing aspects
- improvisation 85%, combination 54%, artifact 83%, recombination 92%, collective 59%, creativity 34%, emergent 52%, journey 83%),
- individual entrepreneurial behavior and “doing things with whatever is at hand”

## Frugal Innovation – Industrial and market perspectives

- words related to economic dimensions especially the **business sector** (business 51%, MNCs (multinational companies) 73%, capability 61%), and competitive issues (competition 57%, innovation (57%), disruptive (82%), frugal (64%), reverse (84%), low-end (77%).
- **Market** 42%). The studies involve theoretical (74%) and empirical (66%) approaches. Business, research. Competition, Cost, Price, Manufacture, Car (Tata)
- **manufacture** 80%, (electronic 73%, vehicle 87%, Tata 91%, motor 87%, water 57%) **producing goods** (car 88%, products 43%, Nano 91%, mobile 67%, phone 82%, equipment 79%) and **services** (46%) in developing economies

# What do Mexican Frugal Innovation may look like?



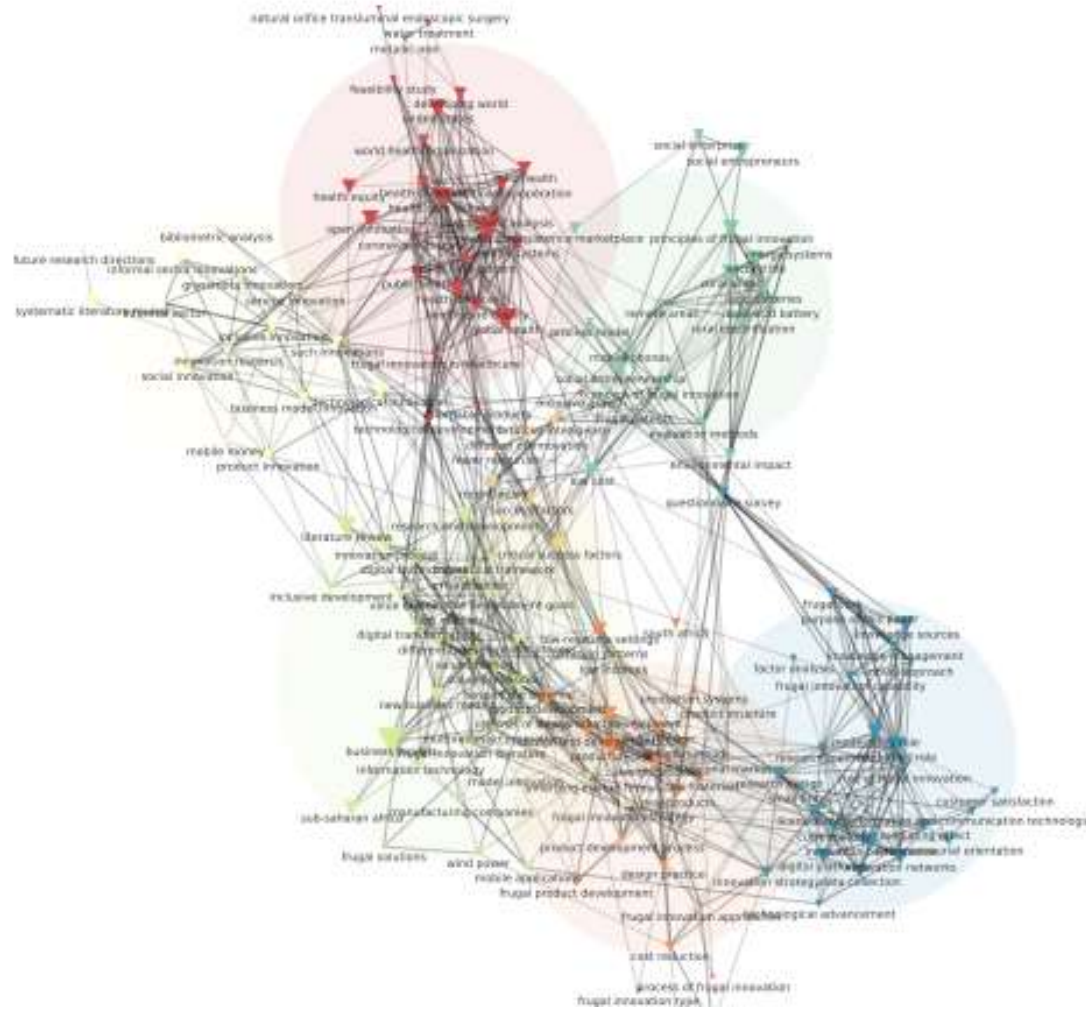
# Synthetic view of FI literature



“Frugal innovation” (Scopus search: n= 527)

→ most frequent terms extracted (titles, keywords, abstracts)

→ terms/terms co-occurrence mapping



# Synthetic view of FI literature

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**CONCEPTS of innovation** – “social”, “inclusive”, “grassroots”, “informal”, “bop”, “eco-”

**AREAS of intervention** – rural energy, water, health, communications, manufacturing

**DIFFUSION of (frugal and frugal-related) innovation** – across countries, sectors

# Literature search on FI-related phenomena specific to Mexico

- “Mexico” AND...

- “social innovation”
- “resource constrained”
- “eco-innovation”
- “rural electrification”

- “Mexico” AND...

- “social innovation”
- “resource constrained”
- “eco-innovation”
- “rural electrification”

# Literature helps identify targets for future Mexican FI fieldwork

→ Areas

**RURAL ELECTRIFICATION** – e.g., solar cooker, solar water purifier, solar laptop (Broughel 2019)

**WATER** – e.g., small water treatment plant, rainwater harvesting system (Molina-Maturano et al 2020)

**AGRI-FOOD** – e.g., agroecology innovations (Orozco-Meléndez & Paneque-Galvez 2022)

**CONSTRUCTION** – e.g., affordable housing & self-construction materials (Palomares-Aguirre et al 2018)



# Other notable contributions of literature search

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Engineering student fieldwork on FI: recently done here, at Iberopuebla (Molina & Cuevas 2019) !

Diffusion question: example of Farmacias Similares as both frugal and social innovations (Montoya and Cervantes 2022) Engineering student fieldwork on FI: recently done here, at Iberopuebla (Molina & Cuevas 2019) !

Diffusion question: example of Farmacias Similares as both frugal and social innovations (Montoya and Cervantes 2022)

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Thank you  
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