University – Industry interaction: Cuban Study Case at the Electric Sector

DR. MIRIAM VILARAGUT LLANES, DR. MIGUEL CASTRO FERNÁNDEZ, DR. MIRIAM L. FILGUEIRAS SAINZ DE ROZAS, DR. ARIEL SANTOS FUENTEFRÍA & DR. JYRKI LUUKKANEN
Questions

- What are the main mechanisms that act on the link between the CIPEL and the Electrical Connection?
- What are the similarities and differences with the mechanisms reported on this interaction in Latin American countries?
- Is possible to draw lessons that can contribute to the formulation of the policy and socio-economic development of the country, with the results of the work?
Framework

✓ Extensive literature on university-industry linkage, and its impact on the innovative performance.

✓ The empiric evidence suggests the multiplicity in the channels of interaction through which the knowledge is transferred.

✓ Dutrénit et al (2010) suggest that there have been few studies that address the reality of the effectiveness use for different channels of interaction.

✓ Consider the use of different channels associated with motivations that lead to this interaction, classifying interaction channels in four groups.
Dutrénit et al (2010) suggest:

**Traditional.** - from academia to industry: teaching and research.

**Services.** - from academia to industry: consulting, testing, training.

**Commercial.** - from academia to industry: patents, technology licensing, incubators of knowledge.

**Bidirectional.** - knowledge flows in both directions: the joint R&D projects, participation in networks, etc.
Material and Methods
The methodology is based on two surveys:

**Sample:** 23 managers and specialists of the Cuban electric sector and 15 professors-researchers from the University.

The professors-researchers have a high link with the electric sector, providing solutions to the problems that arise there for more than 20 years of working together.

We explore the perception of those actors on the channels and interactions.
The first survey methodology

At the first part is identified the importance and frequency of each of the modes of transferring U-I knowledge, analysing separately the perception of the academy (CIPEL) and the company (UNE).

The second part consisted of comparing different modes of ties identified in Cuba, with experiences in other Latin American countries. This analysis allows identify the similarities and differences regarding U-I linkage modes in different environments.
The case study

To evaluate the evolutive nature of the linkage between Research Center (CIPEL) belonging to the Cuban Higher Education and the Electrical Union with its enterprises.

A second survey

To evaluate the level of absorptive capacity (ACAP) concerning to the RES increasing, right now form the both sides. By the model that De Paula Guedes et al (2016) developed.
Evolution at the electrical sector

The case study:

Have following a parallel path

UNIVERSITY  ↔  INDUSTRY

1950s
1959
1973
1986-1989
2004 - 2005
Evolution of the Cuban electricity industry

2004 - 2005

20 programs were developed, focusing into the rational use of energy, and the introduction of the Distributed Generation concept.
Similarities in importance of the channels
Similarities in frequency on the use of knowledge
Comparison of vision in **academic sector** on importance about links channels between University and Industry in the Cuban electricity sector with other 4 Latin-American countries.

<table>
<thead>
<tr>
<th>Interaction manner</th>
<th>Channel</th>
<th>Cuba</th>
<th>Argentina</th>
<th>Brasil</th>
<th>Costa Rica</th>
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Discussions and Conclusions

- The path relationship reveal a parallel evolution over 40 years, and where the relationship grounded between the current CIPEL and national and regional companies of UNE has been one of the key elements.

- It is possible to observe similar trends at academics and managers from UNE, demonstrated a similarity with the perception about the channels used and the importance of the knowledge transferred.

- The managers consider about the frequency in that the interaction occurs, is still a low interaction and academics consider it is enough.

- The value of the correlation coefficient $r$ between both actors 0.98%.
Discussions and Conclusions

- The main channel recognised by the academics is the graduates recruiting to industry in Cuba, while the linking way through the projects of I+D among the university and industry is considered in a second place.

- The investigators spread to assign a bigger importance to any channel comparatively with the representatives of the productive sector, with the same result as in the other four Latin American countries.
Discussions and Conclusions

- In Cuban case the contractual college graduates by industries is the most important channel for academics, the R&D joins projects between U-I is the second and the informality is more important for the researchers, as in other countries of Latin-america.
The results of ACAB level evaluation for both actors, showed that University is best prepared to absorb this technologies in exploration, acquisition and transformation dimensions, but is at the same level in assimilation. This is natural because to assimilate you need to acquire, and this depends of the others sectors.
Discussions and Conclusions

- The linkage developed by the CIPEL with UNE could contribute to strengthen the external and internal interaction helping to develop ACAP along the innovative technology transfer processes with the introduction of RES technologies.

All these experiences could help to the decision makers formulating the policy, in order to achieve the main objective of Cuban electrical sector: change the energy matrix by a new one with a high penetration of renewable energies.
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