

How the Mexican Petroleum Industry Fell Behind in its Innovative and Absorptive Capability and Why New Frontiers Are Not Likely to Be Unveiled for Some Time

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Overview

This paper examines the causes behind the increasing technological gap between the Mexican oil industry and its international counterparts. Through an in-depth, inside-the-firm analysis, I document the evolution of the relationship between the Mexican government, Pemex, and its research branch, the Mexican Petroleum Institute (IMP) and conclude that misaligned incentives among these three entities contributed to a chronic underdevelopment of Mexican petroleum technological capacity. Whereas the conventional wisdom regarding Mexico blames constitutional restrictions on foreign participation as the main culprit for its lagging technology, I argue that the cumbersome institutional framework surrounding the Mexican Petroleum Institute—combined with an ideological bias against investment in research and development within the Mexican government—has been much more important. Moreover, given the errors committed in the past and the long time-frames involved in the oil industry, the adverse consequences for Pemex are likely to persist for several years before changes become noticeable. The implications for the company's entrance into areas such as deep-water exploration and production are discussed.

Methods

Sixty-five in-depth interviews with current and former employees of the Mexican Petroleum Institute, Pemex, and the relevant ministries of the Mexican government are analyzed to discuss theories regarding what factors have driven or hindered innovation and absorptive capacity in the Mexican petroleum sector. This methodology was chosen in order to ascertain with precision the innovative constraints faced by the largest crude oil producing company in North America. When relevant, comparisons are made with the counterpart of the Mexican Petroleum Institute in Brazil.

Results

The following results are presented, following the testing of specific hypotheses:

- The lack of competition in the upstream and downstream sectors led to an absence of incentives to innovate. Innovation activities instead respond haphazardly to short-term professional preferences of the top management and to the existence of friendships between Pemex and IMP employees;
- The IMP lacks a clear mandate, since it is not formally a part of Pemex—and thus Pemex does not directly look after its well being—yet it depends for its survival on Pemex purchasing service contracts due to an incentive scheme devised by the Finance ministry that forces it to earn its own budget year after year;
- Thus, the IMP focuses on selling short-term service contracts rather than on basic and applied research;
- The two organisms with direct influence over the IMP, the Ministry of Finance and Pemex, lack incentives to promote the development of innovative and absorptive capacity. In Pemex, the engineering culture focuses on solving day-to-day tasks and does not allow for promoting long-term technological development. In the Ministry of Finance, the conservative economic culture focuses on liberalization and is highly skeptical of misallocation of resources due to subsidies to industrial development;
- Prospects for future success are low, since the chronic absence of “learning-by-doing” places the Mexican petroleum industry at a disadvantage in the management and development of cutting-edge technology.

Conclusions

Regarding the theory on industrial innovation, this paper provides empirical evidence that the absence of competitive pressures hinder the creation of incentives for innovation. This constraint is magnified when the government does not provide subsidies for R&D to compensate the absence of a demand-pull.