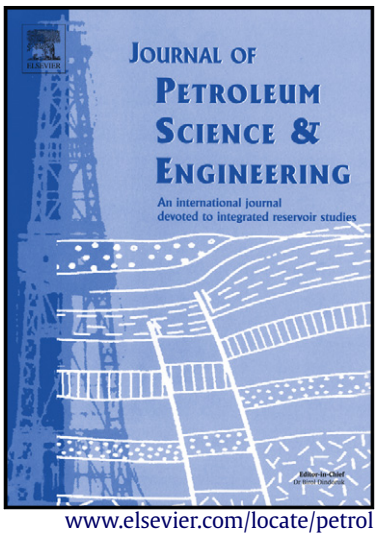

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How Innovation and R&D Happen in the Upstream Oil & Gas Industry: Insights from a Global Survey

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Abstract Few would argue that the upstream oil & gas industry has become more technology-intensive over the years. But how does innovation happen in the industry? Specifically, what ideas and inputs flow from which parts of the sector's value network, and where do these inputs go? And how do firms and organizations from different countries contribute differently to this process? This paper puts forward the results of a survey designed to shed light on these questions. Carried out in collaboration with the Society of Petroleum Engineers (SPE), the survey was sent to 469 executives and senior managers who played a significant role with regards to R&D and/or technology deployment in their respective business units. A total of 199 responses were received from a broad range of organizations and countries around the world. Several interesting themes and trends emerge from the results, including: (1) service companies tend to file considerably more patents per innovation than other types of organization; (2) over 63% of the deployed innovations reported in the survey originated in service companies; (3) neither universities nor government-led research organizations were considered to be valuable sources of new information and knowledge in the industry's R&D initiatives; and (4) despite the increasing degree of globalization in the marketplace, the USA still plays an extremely dominant role in the industry's overall R&D and technology deployment activities. By providing a detailed and objective snapshot of how innovation happens in the upstream oil & gas sector, this paper provides a valuable foundation for future investigations and discussions aimed at improving how R&D and technology deployment are managed within the industry. The methodology did result in a coverage bias within the survey, however, and the limitations arising from this are explored.

Key words: oil, gas, innovation, technology, survey

1. Introduction

Oil & gas have been mainstays of the world's energy mix for decades (BP, 2012), and this trend will probably endure for many years to come (Bullis, 2009; Cook, 2007; Fischer, 2007; Longwell, 2002; World Economic Forum, 2008; Yergin, 2009). While the global demand for these energy sources continues, however, the industry that provides them is changing in two fundamental ways. First, with much of the