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NAVIGATING THE NEW SPACE RACE: EMERGING TRENDS, CHALLENGES AND  
OPPORTUNITIES IN COMMERCIAL LUNAR MARKET

**Abstract**

The world is witnessing a surge in nations expressing their willingness to send missions to the Moon with their Lunar ambitions varying significantly. During the space race between USA and Soviet Union, space programs including Lunar missions were government driven to showcase country's space power with minimum to no participation by commercial entities. Currently, it is plausible that the world is either heading towards or already witnessing a bipolar Lunar space race, the United States and its partners, with Artemis Accords, on one hand, and China, Russia and its allies on the other. This race, with more commercial participation, will not just depend on the technological advancements but also on the economic, regulatory, social, political aspects.

Geopolitics plays a crucial role in this scenario, as countries, especially developing nations need to carefully consider their strategic partnerships and alliances to achieve their Lunar objectives. While developing nations that are increasingly showing interest in Lunar exploration must consider how they can participate actively, this is an opportune time for commercial companies to go to the Moon, as space exploration is no longer limited to government agencies alone. Private players have entered the field and unlike space agencies, commercial companies are driven by profit and are focused on developing sustainable business models for Lunar exploration.

This paper provides a comprehensive analysis of the emerging commercial Lunar activities, offering insights into key players, funding challenges, governmental policies, and potential business models, to assist commercial companies in succeeding in the Lunar market. Firstly, we will examine the budgets of various space agencies for Lunar missions and highlight the recent trend of private players' involvement in this field. We will categorize these private players based on their business models and their level of engagement in Lunar activities. Secondly, we will focus on the challenges faced by Lunar startups in developing nations. We will analyze the difficulties these startups face in securing funding, navigating government policies, and accessing departmental or space agency support.

Thirdly, we will explore various business models adopted by Lunar companies, including joint ventures, partnerships, and investment structures. We will also conduct a PESTEL analysis for developed and developing economies and compare the various macro-environmental factors that impact the commercial entities' ability to participate in Lunar activities. Finally, we propose strategies for commercial startups in developing nations to participate actively in Lunar market.