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India's space program a wise investment

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ABSTRACT:

While there are several propositions on the futility of investment in space exploration. However, data suggests the use and the utmost significance of space exploration. This paper intends to explore the various uses of space exploration and the various reasons why India should invest in space exploration and learn from the data collected in the growth and development of the nation.

Several applications in our day-to-day activities have been derived from the knowledge gained from space exploration. However, the cost of implementing these technologies and their benefits should make sense. This paper intends to dive into the various reasons why space exploration is extremely essential for a developing nation. Further, it dives into how the cost of space exploration makes sense.

Developed nations have invested gargantuan amounts in exploration and have created what is called extremely harmful space waste. However, we need to see the benefits and find alternatives to stop creating waste instead of avoiding the entire process as it is. This paper explores the various nuances to space exploration and how it is beneficial for the development of a nation and to be the leader of innovation. To be on the forefront of growth and development a nation must have a space program. This paper explores various aspects of this exploration.

Keywords: Space, Chandrayaan, Satellites

Introduction:

1. Why did the tsunami of 2004 kill 250,000 people?
2. Why did a volcanic eruption in the 19th century kill 92,000 people?
3. Why did 4000 people die in our state of Gujarat in 1998 due to a "very severe cyclonic storm"?

You may be wondering why we are discussing such an old event now and how it relates to the current issue. Well, these cases may be old but they are very important to understand today's topic. All these incidents have caused a lot of damage to human society and these incidents happened due to the lack of technology that we have today.

We have never explored space but now we can detect asteroids, detect and measure the movement of waves, detect low pressure in the ocean and protect humanity. Moreover, when global warming, environmental threats, etc. come into play, it is good to know that there are alternative planets to colonize.

In fact, Tesla Technology and billionaire CEO Elon Musk have said in interviews that there is a possibility of establishing a human colony on Mars. I would like to ask my friends who are against this movement when was the last time you heard of people dying from a volcanic eruption? Probably not recently or even since they were born. This is because space programmers have made significant progress, so the possibility of such errors is now very slim. We are literally challenging the agencies and CEOs to prove that all this spending is wrong, and that it should be used for other purposes because respectable and worthy opponents think there are better alternatives. Research is the epitome of human intelligence.

The human drive for exploration is not new. From Earth exploration to space exploration, everything goes back to the ancient skies. The saying, "Research is essential to development," is indeed wise.

Why India Needs a Space Program "Should developing countries invest in space programs?"

This is a very important question. Not just for India, but for all countries, and indeed for all of humanity. Why should we spend astronomical amounts of money on astronomical research? Why shouldn't we use the money to feed the poor, protect the vulnerable, provide education, and improve the economy?

What if I told you that funding one idea could accomplish all of the above and more? India's space programs, including the Moon and Mars missions, are often questioned because of India's poverty problem. My answer is divided into three parts to appease everyone's logos, ethos, and pathos.

First, it is important to note that the poor are the ones who need innovation the most. The rich, not the poor, can survive on their wealth. Poverty can only be overcome through ingenious innovation. If a country has a space program, does it help reduce national poverty or does it increase it? At first glance, it seems that countries that spend money on building satellites to explore the solar system and beyond have less money to fight poverty.

This argument ignores the economic and social transformational potential inherent in modern technologies, where space is the only thing. If developing countries have not developed their own infrastructure for modern technologies, they will either be without benefits (Internet access, mobile phones, satellite TV) or will be at the mercy of third-party providers, paying pre-determined commercial rates. They will have little or no say in the availability or quality of services.

Increased Poverty or the Indian Cost of Space: A Solution to the Dilemma Getting accurate data on how much countries spend on space programs or on the cost of individual missions is problematic. Definitions of poverty vary across countries, organizations, and over time, making it difficult to measure and compare global poverty levels. National space programs have objectives that are intertwined with national security, geopolitical, and economic aspirations.

The significant contributions from resources outside the space program's jurisdiction are generally not included in the estimates. Physical security can be provided by the Army, the Navy often uses it to help recover capsules after splashdown, and educational institutions have contributed to the design and development of payloads. The United States, the world's leading economy and a country with an advanced space program, has shown that poverty reduction is not a goal. During the Mercury, Gemini, and Apollo missions, the poverty rate in the United States fluctuated between 10% and 15%.

Utilitarian perspective:

The space program is critical to the national economy, homeland security, and technological superiority. ISRO Achievements:

RISAT-1: India's own crop monitoring satellite. Provides information to the government on crop quality, quantity and failure. Important for national food security.

INSAT-4A and 4B: Advanced satellites for home TV services. You can watch TV. In this creation. RESOURCESAT-1 and IRS series: Remote sensing satellites for weather data and flood visualization. If a flood is imminent or is happening, we will know about it before we see the devastation, thanks to these satellites.

RISAT-2: India's "reconnaissance satellite" used for military purposes to test penetration and monitor potential terrorist activities.

We take many of our daily activities for granted. From the mobile phones we use to the TVs we watch, ISRO touches people's lives in such subtle ways. The next time disaster strikes, thank the Indian Army for saving people. But don't forget how they learned about it. Have you ever gone to the grocery store to buy your weekly rations? One of the reasons the stores are open is because the government knows what crops are going into the stores. Have you ever wondered who told the government which crops would grow well and how to harvest them properly for optimal use?

India also has the world's most successful space launch vehicle, the PSLV. Success rate? 96%. This is important because when other countries and private entities see this, they become more confident and willing to pay more for the services we provide. We launch satellites for others.

Nationalistic view:

History shows us very clearly that space exploration is a matter of national pride and self-respect. The superiority of space exploration was one of the fronts of the Cold War. The moon landing was celebrated more as an American achievement than a human achievement.

The same goes for India discovering water on the moon. In short, if our space program has accomplished something and yours has not, ours is better than yours. Frankly, this is a very superficial reason for funding science and technology programs, but under the covers, science is at least advancing.

This perspective also intersects closely with internal security considerations. Superior technology in this area means improved development capabilities for reconnaissance satellites, ICBMs, etc.

Personal opinion:

Not everything can be evaluated in terms of cost. For example, the recent Chandrayaan-3 mission will give a huge boost to India's space exploration plans. And it is also cost-effective. So while we salute the achievements of ISRO and its scientists for the incredible success of Chandrayaan-3, we should also thank them for allowing India to move ahead. Now, we actually have a place on the moon.

The Numbers now let's start the math.

For this, let's take the example of Chandrayaan-3. Millions of Indians looked up to the sky in anticipation of when our scientists promised (read: toward the TV) that they would bring us the moon.

With Chandrayaan-3, the Indian Space Research Organisation (ISRO) has achieved something that has never been done before: landing a spacecraft on the south pole of the moon, the “dark side”. This is Chandra won from Chandrayaan

So the question arises, is Chandrayaan-3 worth it? Let's see what these stories say.

Remember the under-construction Bhagalpur Bridge over the Ganga that collapsed in June?

The four-lane bridge project is estimated to cost Rs 1,710 crore. This is the second time that a bridge under construction has collapsed. India could build a bridge and collapse it three times for the same amount of money it spends on Chandrayaan-3.

From road to air.

Indigo received its biggest ever aircraft order from Airbus in June, for 500 A320 aircraft, worth Rs 44 lakh crore. They will probably fly domestic flights. Imagine going to the moon for a fraction of that cost. Forget domestic flights.

How about time travel? The Dubai Museum of the Future, a vanity project that gives visitors a glimpse into tomorrow, was built at a cost of \$136 million, 1.5 times the cost of the Chandrayaan-3 mission. Comparison of Chandrayaan-3 and other space programs First, Chandrayaan-3 is one of the cheapest space programs.

The cost of the Russian Luna 25, which crashed while attempting a soft landing on the lunar South Pole, was a whopping Rs 1.6 billion. China's lunar mission was even more expensive. Change's first lunar mission cost Rs 1.752 billion (1.4 billion Yuan or \$219 million). The Chandrayaan-2 mission will cost India Rs 978 crore. However, with the development of launch vehicles and orbiters, Chandrayaan-2 helped reduce the cost of the Chandrayaan-3 project. Forget about actual moon exploration.

Even movies set in space cost more. Christopher Nolan's 2014 sci-fi film Interstellar was made on a budget of \$165 million, which is equivalent to Rs 1,368 crore at current exchange rates. That's more than double the cost of the Chandrayaan-3 project. Even The Martian starring Matt Damon is more expensive than Chandrayaan 3.

Why are we looking to Hollywood? Our Adipurush based on Suryavanshi Sri Ram is more expensive than Chandrayaan 3.

Conclusion:

When combining the different facets impacted by the space programme, as well as the opportunities offered by disruptive technologies, I imagine a future of our country where quality is enhanced while security and processes are more efficient, and effective through a broader adoption of technology.

As we harness disruptive technologies, we need to continue doing what we do best: questioning, analysing and evaluating data from every perspective. Space exploration is only a means to resolving the problems and reaching a developed end. Hence I would like to conclude by stating space exploration is of utmost importance to solve the innumerable problems faced by India.

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