Scholarly Research Journal for Interdisciplinary Studies,
Online ISSN 2278-8808, SJIF 2021 = 7.380, www.srjis.com
PEER REVIEWED & REFEREED JOURNAL, MAR-APR, 2022, VOL- 9/70

TOURISM BEYOND ATMOSPHERE

Mohammad Yaseen Malik[1] & Manzoor Ahmad Khan[2]

[1]*Dept. of Commerce, Govt. Degree College Bandipora Kashmir*

[2]*Dept. of Tourism, Hospitality & Leisure Studies, University of Kashmir*

Paper Received On: 25 APR 2022

Peer Reviewed On: 30 APR 2022

Published On: 1 MAY 2022

Abstract

"Tourism beyond Atmosphere" refers to any commercial operation that provides customers with direct or indirect space travel experiences. Long-term stays in orbital facilities, short-term orbital or suborbital flights, and even parabolic flights in an aircraft exposing passengers to brief periods of weightlessness are all examples of such activities. Flights into space by private individuals are gaining popularity among the general public. While chartered flights are not yet available, "space tourists" have taken orbital flights on occasion. So far, seven "space tourists" have been flown to the International Space Station ("ISS"), all of whom have been charged a significant sum of money for their participation. In this work, I have attempted to provide a clear and accessible description of Space Tourism. In this paper, the notion of space and space stations is discussed in great detail, as well as the details of the first space station. In this study paper, I also touched on the history and growth of space tourism. This paper also discusses the benefits and drawbacks of space tourism. In addition, I have attempted to analyse the impact of space flight on humanity, as well as the development and future of Space Tourism.

Key Words: *Virtual reality, astronauts, cosmonauts, spaceship, space tourist, space station, weightlessness, space, gravity.*

Introduction

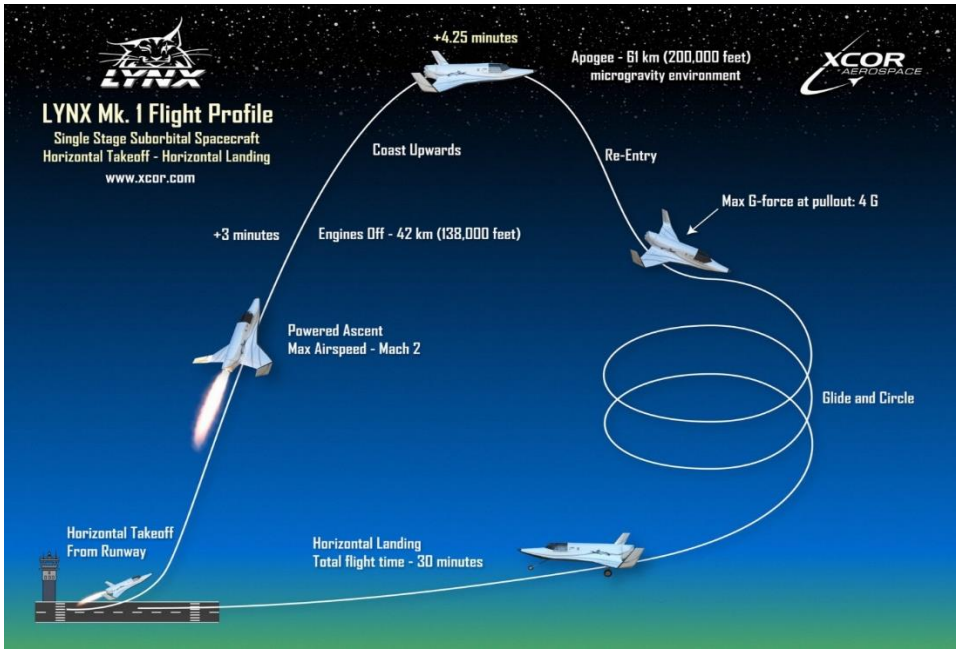
"Tourism beyond Atmosphere" refers to space travel for leisure, recreation, or business. The term "space tourism" refers to the concept of paying consumers travelling beyond the atmosphere of the Earth. Space tourism can also be characterized in terms of the destination concept, rather than only the vehicles that transport public people into space. As a result, the industry can be imagined to include not only earth-based attractions that simulate the space experience, such as Space Theme Parks, Space Training Camps, Virtual Reality Facilities, Space Hotels (Skotel), Multimedia interactive games, and Tele Robotic Moon

Rovers controlled from Earth, but also parabolic flights, vertical suborbital flights lasting up to three days, or a weeklong stay at a floating Space Hotel, including participatory educational activities.

Space experience options	Parabolic flight	High altitude balloon flight *(Proposed)*	High altitude jet flight	Suborbital flight *(Proposed)*	Orbital flight
Brief description	Flying on a passenger jet in a series of parabolic arcs to create brief periods of weightlessness	A balloon ride in a commercially built "gondola" to the upper reaches of the atmosphere	Flying with a pilot on a fighter jet to twice the altitude of a commercial airline flight	Flying on a commercially built suborbital spacecraft past the threshold of space	Launching into orbit for a multi-day stay aboard the International Space Station
Total flight duration	90 minutes	3 to 4 hours	45 minutes	2 hours	1 to 2 weeks
Weightlessness	30-second bursts for a total of 10 minutes	Brief periods of reduced gravity may be possible during descent	None	1 to 5 minutes	1 to 2 weeks
Required Training	1 hour briefing	1 hour briefing	Same-day training and medical checks	2 to 3 days of training and medical checks	3 to 6 months of training and medical checks
Passenger Capacity (per flight)	Up to 30 people	Up to 4 people	1 person	Up to 6 people	1 person
Price per person (not including transportation to launch site)	$5,200	$155,000	$25,000	$95,000 to $200,000	$50 million
Maximum altitude	34,000 feet (~6 miles)	118,000 feet (~22 miles)`	70,000 feet (~13 miles)	327,000 feet (~62 miles)	1 million feet (~200 miles)
View	Similar to the view from a commercial airliner	Curvature of the Earth, blackness of space, and thin blue layer of the atmosphere	Curvature of the Earth, blackness of space	Curvature of the Earth, blackness of space, and thin blue layer of the atmosphere	Orbit the entire Earth every 90 minutes

Table 6: Space-related tourism experiences (including SRVs)

However, when it comes to diverse points of view, different governments and organisations have different definitions of space tourism. Many private travellers have objected to the label "Space Tourist," claiming that their involvement was more than that of a bystander because they conducted scientific experiments during their visit. Suborbital flights at even greater altitudes might open up new realms of space exploration. The term "suborbital space travel for tourism" can be defined. Customers take a short ballistic journey into space in a Space Craft, experience a few minutes of weightlessness, and then return to Earth without orbiting. Suborbital flight, for example, can be achieved with Ascender (Bristal Space Planes).



Suborbital space tourism has yet to take place, but it is expected to be more inexpensive in the future. Many businesses see it as a money-making opportunity. Passengers would remain weightless for three to six minutes, with a view of the Twinkle free Starfield and the bent earth below.

Passengers on orbital flights would be able to see multiple continents as well as numerous sunsets and sunrises. There would be plenty of opportunities for weightlessness experiences. Take, for example, an Orbit mission with the Kankon Maru (Kawasaki). The intricacy of the situation for a Moon Trip increases dramatically when compared to a basic Suborbital or Orbital travel. The total delta velocity required for the entire operation is in the range of 20 kilometers per second. Moon trips are unlikely in the medium term, but could happen in the long run in the framework of space tourism. Holidays on the Moon, for example, or space tourism to other planets.

However, attention appears to be changing toward providing "cheaper trips" that aren't aiming at the ISS but are still "suborbital," making them more accessible to a wider audience. Even with such brief travels, a space traveler has a variety of possibilities. (i) One idea is to employ an aircraft to carry a space cabin to a predetermined altitude, similar to Space Ship One. The cabin then detaches from the plane and continues on its suborbital journey to greater altitudes. When this procedure is utilized, the space vehicle has two options for returning: (a) it returns to where it started, or (b) it returns to a different spot on Earth ("space transportation"). The "Delta Clipper Experimental"(ii) is a second option that employs a rocket with a space capsule on top that is launched, and then the capsule separates

from the rocket at a specific altitude. As a result, the space capsule's passengers are exposed to Zero-G gravity, and both vehicles return to Earth separately. This method is intended to be used by Blue Origin's "New Shepard." (iii) As a result, "Space Tourism" activities may entail the utilization of aircraft and/or spacecraft. Depending on the location of such actions, either air or space law, or even both, may apply. The two legal systems have evolved independently throughout history, and as a result, they have significant distinctions. As a result, a number of legal difficulties concerning the conduct of Space Tourism operations develop. The delimitation of airspace and outer space, authorization to perform Space Tourism, registration of the aircraft or spaceship, liability to passengers and third parties, and the status of passengers are all topics covered in this article. In terms of aviation law, both international and national law provides detailed requirements for passenger transportation. However, there are currently no comprehensive restrictions for passenger transportation in international space law. The United States was the first country to make a particular reference to "space flight participants" in its national space law. Even if these regulatory measures in the United States are only of a national nature, they may signal a trend toward control of Space Tourism operations on both the national and international levels. In this regard, the Swedish government announced an agreement with Virgin Galactic on January 26, 2007, covering mid-summer and mid-winter flights of Virgin's "Spaceship Two" from Sweden's spaceport in Kiruna. (iv) Their Memorandum of Understanding requires Swedish authorities to develop a regulatory structure modelled after the Federal Aviation Administration in the United States ("FAA"). (v) As a result, a closer examination of the relative recent regulatory actions in the United States appears to be particularly fascinating. (vi) When considering these legal issues, it's logical to wonder whether current laws are sufficient for future Space Tourism activities, or whether new international legal instruments or amendments to existing laws or legal structures are required.

What is Space

Outer space, from the perspective of an Earthling, is a zone roughly 100 kilometers (60 miles) above the planet earth, where there is no oxygen to breathe or light to scatter. Because there aren't enough oxygen molecules in that area to keep the sky blue, blue loses way to black. Furthermore, no one knows the size of the space. No one can hear you scream in space. This is due to the fact that space is devoid of air - it is a vacuum. In a vacuum, sound waves cannot travel. No one can hear you scream in space. This is due to the fact that space is devoid of air - it is a vacuum. In a vacuum, sound waves cannot travel. Because there

is no earth's gravity in space, there is no such thing as weightlessness. The Moon, where the GPS satellites orbit, Mars, other planets, other stars, the Milky Way, black holes, and distant quasars are all examples of space beyond the Earth's atmosphere. Space also refers to the near-vacuum that exists between planets, moons, stars, and other objects — it's the interplanetary medium, interstellar medium, inter-galactic medium, intra-cluster medium, and so on; in other words, it's very low density gas or plasma.

Flight up (craft)	Flight down (craft)	Duration	Mission	Tourist(s)	Destination	Fee paid	Tour company
October 13, 2021 (New Shepard Crew Capsule)	October 13, 2021 (New Shepard Crew Capsule)	10 minutes	Blue Origin NS-18	William Shatner Chris Boshuizen Audrey Powers Glen de Vries	Sub-orbital spaceflight (Kármán line)		Blue Origin
December 11, 2021 (New Shepard Crew Capsule)	December 11, 2021 (New Shepard Crew Capsule)	10 minutes	Blue Origin NS-19	Lane Bess Cameron Bess Evan Dick Laura Shepard Churchley Michael Strahan Dylan Taylor	Sub-orbital spaceflight (Kármán line)		Blue Origin
March 30, 2022 (planned) (Crew Dragon Endeavour)	April 9, 2022 (planned) (Crew Dragon Endeavour)	10 days	Ax-1	Eytan Stibbe Larry Connor Mark Pathy	International Space Station	US$55 million each	Axiom Space
December 8, 2021 (Soyuz MS-20)	December 20, 2021 (Soyuz MS-20)	12 days	ISS EP-20	Yusaku Maezawa Yozo Hirano	International Space Station		Space Adventures
September 16, 2021 (Crew Dragon Resilience)	September 19, 2021 (Crew Dragon Resilience)	3 days	Inspiration4	Jared Isaacman Sian Proctor Hayley Arceneaux Christopher Sembroski	Low Earth Orbit		Space X

Flight up (craft)	Flight down (craft)	Duration	Mission	Tourist(s)	Destination	Fee paid	Tour company
July 20, 2021 (New Shepard Crew Capsule)	July 20, 2021 (New Shepard Crew Capsule)	10 minutes	Blue Origin NS-16	Jeff Bezos Mark Bezos Oliver Daemen Wally Funk	Sub-orbital spaceflight (Kármán line)		Blue Origin
September 30, 2009 (Soyuz TMA-16)	October 11, 2009 (Soyuz TMA-14)	12 days	ISS EP-15	Guy Laliberté	International Space Station	US$35 million	Space Adventures
March 26, 2009 (Soyuz TMA-14)	April 8, 2009 (Soyuz TMA-13)	14 days	ISS EP-14	/ Charles Simonyi	International Space Station	US$35 million	Space Adventures
October 12, 2008 (Soyuz TMA-13)	October 24, 2008 (Soyuz TMA-12)	13 days	ISS EP-13	/ Richard Garriott	International Space Station	US$30 million	Space Adventures
April 7, 2007 (Soyuz TMA-10)	April 21, 2007 (Soyuz TMA-9)	10 days	ISS EP-12	/ Charles Simonyi	International Space Station	US$25 million	Space Adventures
September 20, 2006 (Soyuz TMA-9)	September 29, 2006 (Soyuz TMA-8)	10 days	ISS EP-4	/ AnousheAnousheh Ansari	International Space Station	US$20 million	Space Adventures
October 1, 2005 (Soyuz TMA-7)	October 10, 2005 (Soyuz TMA-6)	10 days	ISS EP-3	Gregory Olsen	International Space Station	US$20 million	Space Adventures
April 25, 2002 (Soyuz TM-34)	May 5, 2002 (Soyuz TM-33)	10 days	ISS EP-2	Mark Shuttleworth	International Space Station	US$20 million	Space Adventures
April 28, 2001 (Soyuz TM-32)	May 6, 2001 (Soyuz TM-31)	8 days	ISS EP-1	Dennis Tito	International Space Station	US$20 million	Space Adventures

***Source**: wikipedia*

Findings:

1. So far only 16 tourists have experience of space.
2. Since this is costly affair, the number of tourists is negligible.
3. Training session before going to space is necessary; therefore it is also time consuming affair.
4. There is a risk factor involved in this type of tourism.

5. More awareness and interest of the potential tourists is needed.
6. This activity should be made a regular process rather than long time consuming process.
7. Investment and promotion of Space Tourism is the need of the hour.
8. We cannot expect a mass character but in future it may take off.

Conclusion

Certain areas of Space Tourism, such as cost analysis, present market base, risk assessment, and future scenarios, were investigated in order to determine whether Space Tourism could become a reality. According to recent surveys conducted in Europe, the United States, and Japan, over forty million people are eager to invest in space tourism. According to market research, the space tourism industry has the potential to become a major player in the trillion-dollar tourism industry, rivaling the size of the commercial airline industry. In addition, a cost analysis revealed that Space Tourism could generate significant profits for investors. However, it would take more than twenty years to recoup the initial investment, and the original infrastructure is highly unlikely to be preserved. Expensive risks on initial investments, which result from the low reliability of current launching mechanisms and the high cost of transportation into space, have impeded the development of the Space Tourism business. We promote investment in new technologies like the RLV to improve the cost and reliability of orbital transportation systems (Reusable Launch Vehicles). The construction of the RLV would solve what we view to be the key ailments that are currently holding the Space Tourism business grounded. RLV provides a long-term cost reduction and risk reduction solution. The safety of space flight can be increased because to previous projects like the Kankoh-maru and new technical breakthroughs. The tourist sector would not only transport people into space, but also fund activities that are only possible in space. Ground facilities derived from the space tourism industry's current infrastructure would support and complement space tourism. Finally, we've established the potential of the Space Tourism sector, and we advise investors to take advantage of this potentially massive industry while it's still in its infancy. Through the use of technology, money, and risk, we attempted to show them how this could become a reality. All that remains is for individuals to take the first step toward Space Tourism investment. We cannot expect a mass character in Space Tourism because it is a matter of very high wealth group.

References

Citron, Robert (April 1985). "Space Tourism Could Drive Space Development". The Space Tourist. Fourth Annual L5 Space Development Conference, National Space Society.

Washington DC: American Astronautical Society. pp. 85–771 to 85–774. Retrieved February 17, 2012.

1991: Sharman becomes first Briton in space". BBC News. May 18, 1991.

Bridges, Andrew (November 1, 2000). "NASA: No Room at the ISS Inn for Mir Cast-offs". Space.com. Archived from the original on November 9, 2000.

http://congressional.proquest.com/congressional/docview/t29.d30.hrg-2001-sci-0042?accountid=7082

Schneider, Mike (July 18, 2007). "Int'l space station ticket price climbs". News OK. Archived from the original on April 30, 2013.

Boyle, Alan (June 13, 2006). "Regulators OK Oklahoma spaceport". MSNBC. Archived from the original on April 30, 2013.

"About Anousheh Ansari". Anousheh Ansari (official website). Retrieved April 30, 2013.

Shiryaevskaya, Anna (January 12, 2011). "Space Adventures, Russia Agree to Expand Tourist Trips in 2013". Bloomberg Businessweek. Archived from the original on January 16, 2011.

Tyler, Patrick E. (May 7, 2001). "Space Tourist, Back From 'Paradise,' Lands on Steppes". The New York Times. Archived from the original on April 30, 2013.

"Space tourist gets value for money". CNN. May 1, 2002.

Moskowitz, Clara (June 9, 2010). "Millionaire Space Tourist Wants to Go Back". Space.com.

"Her Ticket To Space: $20 Million". NPR. July 14, 2011.

"Charles Simonyi buys return ticket to space for $35m". The Guardian. March 24, 2009.

"Expedition 18". NASA. Retrieved September 26, 2008.

Morrison, Tim (September 25, 2008). "Space Tourist Richard Garriott". Time.

Clark, Stephen (September 15, 2010). "Boeing allies with Space Adventures for tourist flights". Spaceflight Now.

"SpaceX Falcon 9 rocket enjoys successful maiden flight". BBC News. June 4, 2010.

"Dragon/Falcon 9 Update". SpaceX. September 23, 2009.

Chang, Kenneth (May 25, 2012). "First Private Craft Docks With Space Station". New York Times.

Gilman, Victoria (August 10, 2005). "$100 Million Moon Trip: Space Tourism's Hot Ticket?" National Geographic News.

Covault, Craig (August 18, 2009). "Beating swords into plough shares with Soviet Almaz". Spaceflight Now.

Lander, Sebastian (June 20, 2012). "Fly me to the moon! Company offers lunar holidays (but it could cost you £100 million)". The Daily Mail.

Foust, Jeff (November 1, 2010). "Bigelow still thinks big". The Space Review.

"The Space Island Group's Mission". Space Island Group. Retrieved April 30, 2013.

"Scotland 2040: Spaceships head for Moon with lunar golfers and crater ramblers aboard". The Scotsman. October 12, 2006.

Said, Caroyln (September 28, 2004). "British tycoon wants to fly you to space: Virgin Galactic plans to sell $200,000 rides". San Francisco Chronicle.

"SpaceShipOne Flies Again Within 14 Days - Wins $10M X Prize". Scaled Composites. Retrieved April 30, 2013.

"Michael W. Melvill". Scaled Composites. Retrieved April 30, 2013.

Chang, Kenneth; Schwartz, John (October 31, 2014). "Virgin Galactic's SpaceShipTwo Crashes in New Setback for Commercial Spaceflight". The New York Times.

"About Lynx". XCOR Aerospace. Retrieved April 30, 2013.

http://www.flyfighterjet.com/xcor-lynx-space-flight/

"The Next Frontier For Citizen Science". Citizens in Space. May 5, 2012.

"Fliegen wir die Strecke New York-Tokio bald mit Umweg übers All?". Bild (in German). October 26, 2012.

"XCOR Aerospace Announces Space Expedition Corporation (SXC) As General Sales Agent For Space Tourism Flights". XCOR Aerospace. June 7, 2012.

"The U.S. Commercial Suborbital Industry: A Space Renaissance in the Making". Federal Aviation Administration. pp. 6–7.

"Europe joins Space Tourism race". The Times. June 10, 2007.

"US draws up Space Tourism rules". BBC News. January 8, 2006. Retrieved May 24, 2012.

"Code of Federal Regulations: Title 14, Chapter III". U.S. Government Printing Office.

Boyle, Alan (December 23, 2004). "Private-spaceflight bill signed into law". MSNBC. Archived from the original on April 30, 2013.

Ross, Martin; Mills, Michael; Toohey, Darin (2010). "Potential climate impact of black carbon emitted by rockets". Geophysical Research Letters 37.

Mann, Adam (October 22, 2010). "Space Tourism to accelerate climate change". Nature.

Carter, Travis. "Vacation: The Final Frontier". NYU Livewire. Archived from the original on April 30, 2013.

"Space Tourism 1 Lecture". Robert A. Goehlich (official website). Retrieved April 30, 2013.

David, Leonard (October 3, 2006). "Space Tourism Survey Shows Cost, Access Key Selling Points". Space.com.

"EU official balks at Space Tourism". The Peninsula. June 15, 2007. Archived from the original on January 16, 2009.

Boyle, Alan (3 October 2013). "NBC teams up with Virgin Galactic for 'Space Race' reality TV show". NBC. Retrieved 25 October 2013.

"Do Not Call Me A Space Tourist!". Richard Garriot's Space Mission. January 31, 2008.

Knight, Will (April 20, 2002). "'Space tourist' insists on pioneering role". New Scientist. Archived from the original on April 30, 2013.

Boyle, Alan (March 29, 2004). "Space millionaire to mix science with pleasure". MSNBC.

Foust, Jeff (November 29, 2004). "Is it time to dump the t-word?". The Space Review.

"Circus man ready to make 'fairy tale' come true in space". Space Travel. September 10, 2009. Archived from the original on April 30, 2013.

"The Economic Impact of Commercial Space Transportation on the U. S Economy in 2009". Federal Aviation Administration. September 2010. p. 11.

Spotts, Pete (May 6, 2011). "A Space Tourism trip to the moon? It could happen by 2015". The Christian Science Monitor.

"Russia halts space tours as U.S. retires Shuttle". Reuters. March 3, 2010. Archived from the original on April 30, 2013.

"Russia will restore Space Tourism since 2012" (in Russian). Interfax. March 18, 2010.

http://www.spaceadventures.com/index.cfm?fuseaction=orbital.Orbital

"Citizen Exploration". Citizens in Space. February 1, 2012.

McKinley, Jesse (September 7, 2012). "Space Tourism Is Here! Wealthy Adventurers Wanted". New York Times. Archived from the original on April 30, 2013.

Beveridge, Dirk (July 5, 1991). "Pan Am lunar list tethered to earth". St. Petersburg Times.

Belfiore, Michael (2007). Rocketeers: how a visionary band of business leaders, engineers, and pilots is boldly privatizing space. New York: Smithsonian Books. ISBN 978-0-06-114903-0.

"Space: the forgotten frontier?". OECD Observer. March 1, 2003.

"Biographical Data: Byron K. Lichtenberg, SC. D.". NASA. Retrieved September 10, 2012.

"Astronauts: Ulf Merbold". European Space Agency. Archived from the original on April 30, 2013.

Dubbs, Chris; Paat-Dahlstrom, Emeline; Walker, Charles D. (2011). Realizing Tomorrow: The Path to Private Spaceflight. University of Nebraska Press. ISBN 0-8032-1610-6.

Virgin Galactic (June 3, 2014). "NASA and Virgin Galactic Payloads.

Lamar; Hannifan, Jerry (April 22, 1985). "Jake Skywalker: A Senator boards the shuttle". Time. (subscription required)

"Florida Demo calls trip aboard shuttle vital to House duties". The Deseret News. January 14, 1986. p.6.