

SPACE TOURISM MARKETING

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INTRODUCTION

Discovering the unknown and seeing what others have never seen before has been one of the main humans' aspirations since ancient times. Nowadays, unexplored lands left are few and inhospitable. The future of exploration and tourism will be soon away from our planet, specifically above it, in the sky. Sounds like futuristic, but it is not: incredible progresses in aerospace technologies have allowed space tourism industry to rapidly grow, and its forecasts are extremely positive. By now, most of space travelers have been professional astronauts, but in a relatively short time travelling to other planets will be easy and accessible to most of the world population. Nevertheless, the still few players in the industry don't have a clear path. In fact, they must deal with obstacles that do not only concern technical issues: to expand their businesses, potential space tourists need to be attracted and convinced: not everyone today would undertake a so innovative journey. In this context, marketing becomes crucial for the future of the industry in order to reach the goal to expand tourism beyond Earth. Space tourism industry could become the most relevant evidence of the interdependence between communication and major service innovations.

Previous research has studied space travel market focusing on demand analysis, exploring potential customers' behavioral attitude towards this new type of tourism. With the present work, after having integrated results from considered literature with significant aspects of marketing, applying them to this new-born sector in order to create a work that is as complete as possible from a marketing point of view, the aim is to investigate what marketing goals should be pursued and what effect their implementation have on brand equity. Specifically, the study is going to focus on private potential customers, talking about strategies to communicate them the innovation by using the tools like Corporate Social Responsibility (CSR), through social media, whose strategic use for space travels providers is going to be investigated or other innovative tools. These aspects will be investigated based on both the results of previous research and the state of the art of the supply. Moreover, a sentiment analysis based on social platforms comments from Virgin Galactic's profiles will be developed in the research in order to investigate potential customers' perceptions towards this new type of service and the effect that certain communication strategies have on their mindsets concerning the brand.

1 HISTORY AND PROGRESSES OF SPACE TRAVELS

To explore marketing and other aspects in the space economy, the first objective is to give an overall framework of the state of the art in this sector, focusing on the main players. However, the current state of space economy is the result of a succession of missions, new technologies and brilliant minds, which are crucial to mention in order to take up the cited framework as comprehensively as possible. So, before deepening the status of commercial space travels' suppliers, on which the research is going to focus, particular attention will be given to the starting steps that gave birth to the whole space economy. It is fundamental to know these historical events that will be mentioned, in order to be provided with a general background of the discussed sector. Moreover, the state of the art of commercial space travels can't be understood without being provided with a historical knowledge, since it will be able to better highlight the amazing progresses reached in the latest years. The chapter will then face the relatively more recent events concerning the sector in general, and eventually will focus on commercial flights. To this aim, readers will be provided with an overview of the three main launches providers, as well as the diverse services that a potential customer is nowadays able to pick.

1.1 From the first steps to the 2000's

The 20th century witnessed relevant progresses in human exploration as mankind ventured beyond the confines of Earth and into the vastness of space. Space travelling during this era was not only a matter of scientific and technological breakthroughs but also geopolitical issue, deeply intertwined with rivalries and tensions.

The seeds of space travel were sown in the early 20th century by visionaries such as Konstantin Tsiolkovsky and Robert H. Goddard. Tsiolkovsky, a Russian scientist, theorized the concept of rocketry, while American engineer Goddard developed and tested the first liquid-fueled rocket. However, what pushed space exploration to the forefront was the geopolitical tension of that time.

The past century was indeed marked by intense rivalries, particularly during the Cold War between the United States and the Soviet Union. These superpowers engaged in a race for technological supremacy and ideological dominance, using space travel as a battlefield. The space race between these two nations was a catalyst for groundbreaking achievements.

On October 4, 1957, the Soviet Union shocked the world by successfully launching Sputnik 1, the first artificial satellite, into orbit. This achievement propelled the Soviets into the lead in the space race, causing concern and embarrassment for the United States. In the effort to make up ground, the

U.S. established the National Aeronautics and Space Administration (NASA) in 1958, kickstarting an era of unprecedented space exploration.

The following decade witnessed a series of significant milestones in space travel. In 1961, Soviet cosmonaut Yuri Gagarin became the first human to orbit the Earth, instantly becoming a global hero. The United States answered with the Apollo program, culminating in Neil Armstrong's historic Moon landing in 1969, when he declared, "That's one small step for man, one giant leap for mankind."

While the Cold War rivalry fueled the early space race, the later decades of the 20th century witnessed increased space cooperation and diplomatic efforts. Despite the tensions of the Cold War, the United States and the Soviet Union found common ground and recognized the mutual benefits of cooperation in space travel. Scientific progress, risk mitigation, public relations, and economic considerations all played roles in fostering this unexpected collaboration¹. In 1975, the U.S. and Soviet Union conducted the Apollo-Soyuz Test Project, an important demonstration of détente between the two superpowers. This collaboration paved the way for future international space missions and laid the foundation for the International Space Station (ISS), a continuously occupied orbital laboratory that hosted more than 250 people from 20 countries since 1998 which was the result of the cooperation between U.S, Russia, Europe, Canada, and Japan².

Advancements in space travel technology played a pivotal role in shaping the history of space exploration. The development of more powerful rockets, such as the Saturn V and the Soviet N-1, enabled human missions to the moon. The advent of the Space Shuttle program in the 1980s further revolutionized space travel, allowing for reusable spacecraft and increased access to low Earth orbit (LEO), an orbit around Earth at a distance between 160 and 1000 km from the ground³.

The history of space travel in the 20th century was an awe-inspiring journey driven by international frictions, scientific progress, and the relentless pursuit of human potential, a journey that can be framed as a race between the United States and the Soviet Union which spurred extraordinary achievements, highlighting what mankind is capable to reach when positive competition and cooperation occur.

¹ Peter, N. (2006). The changing geopolitics of space activities. *Space policy*, 22(2), 100-109.

² <https://www.space.com/16748-international-space-station.html>

³ [https://www.esa.int/ESA_Multimedia/Images/2020/03/Low_Earth_orbit#:~:text=A%20low%20Earth%20orbit%20\(LEO,very%20far%20above%20Earth's%20surface.](https://www.esa.int/ESA_Multimedia/Images/2020/03/Low_Earth_orbit#:~:text=A%20low%20Earth%20orbit%20(LEO,very%20far%20above%20Earth's%20surface.)

1.2 Latest advances

The more recent steps forward in non-commercial space travels and exploration include a wide set of novelties concerning Mars, Moon and asteroids exploration, new satellite technologies and telescopes.

Satellites turned into small and cost-effective items, called Cube Sats, marking a revolution in the fields of Earth observation, communication, navigation, and weather monitoring.

While satellites enhanced humans' knowledge of the globe, cutting-edge items were also introduced to observe the universe. Relevant examples are the Kepler Space Telescope and James Webb Space Telescope. The former revealed thousands of planets outside the Solar System, the latter found far-distant celestial bodies like a galaxy that seems to be similar to ours and the most ancient black hole ever observed⁴.

Japan Aerospace Exploration Agency (JAXA) has the merit for a deeper understanding of the early solar system's composition and evolution, having returned samples from asteroids Itokawa in 2010 and Ryugu in 2020.

In 2009, NASA made Moon regain its central role in humans' efforts to explore space, through the launch of the Lunar Reconnaissance Orbiter (LRO), which identified potential landing sites for future missions with a detailed mapping of lunar surface. This Orbiter laid the basis for the landings of Chinese Chang'e 3 in 2013 and Chang'e 4 six years later. The second one represented the first landing on the dark side of the Moon.

However, what is probably the most inspiring field in which remarkable strides have been experienced during the last two decades is Mars exploration. The use of a series of futuristic devices equipped with wheels has been crucial for research on Mars since 1996. Two NASA's rovers, called Spirit and Opportunity, followed a previous vehicle, the Sojourner, with experimental aims. They both successfully landed on the Red Planet, providing valuable data about Martian history, geology, and potential habitability. Their performance exceeded the expectations, showcasing the resilience and adaptability of space exploration technology. Curiosity and Perseverance rovers were subsequently launched in 2012 and 2020 respectively. Although there is still relatively little information on this planet, the progress of recent years has fueled an interest already found for several decades and have turned it into something closer to the hope of being able, one day, to call "home" also Mars.

⁴ Discovering distant celestial bodies could also give information about the history of the universe, since light has a speed so that when we observe a celestial body far away from us, we perceive a version of it that is as ancient as the distance that separates us from it.

Considering the five mentioned fields, the late 2000s to today has been a period of technological and scientific progress without equal in space travel. From the proliferation of satellites to the remote exploration of Mars, the understanding of the cosmos has expanded exponentially.

All these innovations are the basis for the aspect on which the present study concentrates, as they define the boundaries within which the commercial activities, that in the following chapters will be deepened, have and will have the possibility to operate and to expand.

1.3 Suppliers

The advances in space explorations in the 60s, peaking in the lunar landing of Neil Armstrong, brought an enthusiasm never seen before among the population, making citizens start considering the achievement of new planets as the obvious and immediate next step in the conquest of the universe and even demanding the possibility to replicate the enterprise: expectations were skyrocketing. However, the seventies and eighties witnessed a reduction in public expenditure for space programs and these expectations were partly disappointed. Just think that between 1968 and 1971 Pan Am, the principal and largest international air carrier of 20th century gone in bankrupt in 1991, issued more than 93,000 “First Moon Flights” Club membership cards that should have ensured the possibility of such a flight based on a waiting list.⁵

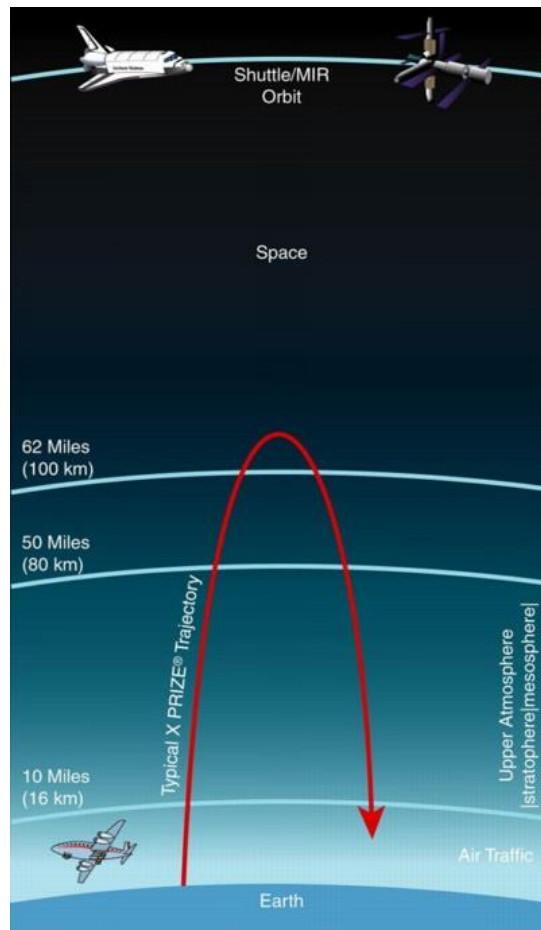
Everything changed after the birth of private aerospace companies in the early 2000s. Entrepreneurs like Elon Musk, Jeff Bezos and Richard Branson understood the market potential stemming from the progress in aerospace technology, component miniaturization and accessibility to key technologies from one side and growing demand for space services from the other side.

So far, the study has considered the topic of space exploration only from an institutional point of view, citing the most important agencies, directly tied to governments. An overview like this is no longer exhaustive since the advent of the new millennium when commercial companies were born, organizations that have made the dream to be a space tourist once again available for citizens. Attention will be drawn to the role these companies play within tourism as a more circumscribed aspect of the wider space economy.

To map the space tourism sector in its current state, it is necessary to divide it into two types. The first to be deepened will be that of suborbital flights, which are launches that involve a trajectory such as to land the rocket not too far from the starting point, on the Earth’s surface. An object launched in a suborbital trajectory reaches an altitude of around 100 kilometers, conventionally called the

⁵ Chang, Y. W. (2015). The first decade of commercial space tourism. *Acta Astronautica*, 108, 79-91.

Karman line, the boundary between the Earth's atmosphere and outer space. At the highest point of the trajectory, weightlessness caused by inertia is experienced for few minutes. The two companies that currently offer such a service are Blue Origin by Jeff Bezos and Virgin Galactic by Richard Branson, founded in 2000 and 2004 respectively. The two experiences proposed differ mainly for the vehicle provided, even if they are both composed by a launch system and a smaller spaceship. About Virgin Galactic, the first component is called VMS Eve, which plays the role of making the second one get airborne. This second one's name is VVS Unity that, once detached, reaches the farthest point of the trajectory from the Earth's crust: the apogee. The overall look of the vehicle is quite near to an airplane's one. This spaceship is reusable and provided with 6 seats and 17 windows. The predecessor of VVS Unity was VVS Enterprise, which crashed in 2014 after a dramatic accident that took the life of one of the two pilots onboard. On the other hand, Bezos' company created a suborbital vehicle whose aspect is much more similar to a rocket as they are commonly known: the New Shepard. After the launch, a long component separates from the capsule containing the crew. The capsule has one crew member slot and six of them are available for tourists, who are able to watch the Blue Planet from the largest windows to have flown in space. Landing gears that deploy for touchdown are provided, which makes it a completely reusable vehicle just like the VVS Eve. Both spacecrafts are designed to guarantee space tourists an amazing view of the planet, clearly visible in all its sphericity at such a distance from the ground. One, as well as the other one, provides customers with training sessions before the time of departure. Tourists who chose Virgin Galactic have a luxury accommodation near the spaceport in New Mexico, where they can settle for two days, then the actual training is delivered during the next three days. Instead, Blue Origin's experience includes a shorter training that lasts only two days in the West Texas Launch Site One.



[Fig.1]: Suborbital trajectory
 Source: Universe Today

The other space tourism market concerns orbital and lunar flights, an area where suppliers are still in a phase of experimentation and development of products able to meet the growing demand. However, it is already possible to glimpse what may be the upcoming developments, as the companies that have started to move in this sector are already providing a series of information that make the supply be thought as something very close, rather than a future dream. A brief definition of orbital flight is required, that is, a trajectory that, instead of developing pseudo-perpendicular to the Earth's surface, as has been seen to be a suborbital flight, makes the rocket reach an orbit around the planet, at a distance from the ground that is directly proportional to the speed. There are several orbits that have different altitudes: the one that is more appetible for the commercialization of outer space is the Low Earth Orbit (LEO)⁶, the portion of space above 1000 km where the International Space Station

⁶ NASA Interim Directive: Use of ISS, 2019 https://www.nasa.gov/sites/default/files/atoms/files/nid_8600_121_tagged.pdf

is located. The experience is largely different, as it provides, in addition to the journey itself, a stay in the ISS, which makes it much less comfortable, more expensive, and more complicated to organize. However, new technologies and services are being developed in order to make such a travel more desirable for intrepid visitors. The first company we are going through is also present in the suborbital market: Blue Origin. In fact, in addition to the New Shepard, Bezos' company has built another colossal-sized vehicle whose first use is expected in 2024 and which is able to bring payloads as well as paying customers. During a New Shepard flight test in 2016, Vice President of Commercial, Astronaut & International Sales Ariane Cornell appeared to confirm that tickets are expected to be available also for tourists, with a preemption for those who purchased a suborbital trip.⁷ The next player this work will cite is not concerned with manufacturing spacecrafts, but only with organizing space tours. It is called Space Adventures and it has been the only company sending tourists in space from 2001 to 2021. Having much higher costs and much less availability compared to a suborbital experience, these tours have been fewer: only nine wealthy civilian explorers have had the privilege to fly to the International Space Station on the Russian Soyuz spacecraft,⁸ living and working alongside professional astronauts for 10 days or more and paying tens of millions of dollars. The ninth tourist, Yūsaku Maezawa, has also made an onerous deal with SpaceX, called Project "dearMoon". SpaceX, founded by Elon Musk in 2002 with the mission of colonizing Mars and making space more accessible through cost reduction, is the most relevant private player in the space economy. In addition to providing launch services and satellite communications, it manufactures its own spacecrafts. Through this deal, signed in 2018, the Japanese entrepreneur, together with a group of artists he selected, will become the first non-astronaut to orbit the moon, and so the first lunar tourist. The project will be carried onboard the brand-new Starship, the most powerful launch system ever developed. It has been scheduled for 2023 and will last a week.⁹

After around twenty years, these companies have acquired sufficient experience to offer national agencies themselves attractive solutions for their various programs and they now play a role in space travelling that is as relevant as that of the agencies previously mentioned. For instance, several agreements have been concluded between NASA and the three main American private companies, with the aim of reducing the cost of the launches. Through these agreements, NASA has passed progressively from a government-managed system of access to the ISS to a competitive system in

⁷ <https://arstechnica.com/science/2016/10/blue-origin-just-validated-the-new-space-movement/3>

⁸ From 2011 to 2020, Soyuz spacecrafts were the only vehicles able to reach ISS.

⁹ <https://dearmoon.earth/>

which the goods-transport operations are provided by private companies with fixed-price contracts (Commercial Orbital Transportations Services).¹⁰ However, what is probably the most relevant example of cooperation between governments and private businesses is the Artemis program, through which NASA will bring humans back to the Moon after more than 50 years for research purposes: in the mission "Artemis 3" and "Artemis 4", the astronauts will land on the Earth's satellite through SpaceX Starship, while during "Artemis 5" the Human Landing System (HLS) designated is the Blue Moon, built by Blue Origin. Both vehicles will be hooked to the Lunar Gateway, a cislunar station planned by NASA, ESA¹¹ and JAXA for 2024, which will be reached aboard the Orion, a spacecraft owned by the American space agency.

To summarize, it has been ascertained that within the field of the space tourism the suppliers that produce their own means are private companies and that the main ones are three. These include Virgin Galactic as a specialized player in sub-orbital space tourism, SpaceX as a leader in the space economy but with no presence in suborbital flights, and Blue Origin as the most diversified enterprise in future projection: New Shepard for suborbital tourism, New Glenn for the orbital one and Blue Moon for lunar Landings.¹² Few orbital touristic expeditions have been carried out only by Space Adventures on Russian rockets.

As things stand, sub-orbital tourism is at a much higher and more active stage of advancement than the space tours involving real travel. Nevertheless, all the new devices mentioned in this paragraph are clear evidence that the industry is expanding, thanks to suppliers that are proving eager to satisfy the growing attraction from the most innovative tourists.

¹⁰ Friel, M. (2020). Tourism as a driver in the space economy: New products for intrepid travellers. *Current Issues in Tourism*, 23(13), 1581-1586.

¹¹ European Space Agency

¹² Among Blue Origin's vehicles, New Shepard is the only one currently operational.

2 SPACE TOURISM MARKETING

Once given an overview of the industry in its current state, the study will now focus on attempts by the aforementioned players to expand their business to a wider audience through marketing tactics. Such tactics will be probably crucial to achieve a general growth of the space tourism penetrated market, still very small compared to the objectives of private companies and to the forecasts, which attribute a projected market value of US\$13,239.5 million for 2033¹³. To this aim, on the basis of a market segmentation followed by a definition of the targets and an analysis of the potential customers' decisional process, the chapter will provide readers with communication strategies mainly suited to the characteristics of demand. Eventually, it will also highlight their role in brand equity building.

2.1 Private demand features

Before deepening the strategies, potentially or actually implemented by the main tourism operators, a relevant feature of the actual demand needs to be mentioned: it is the prevalence, within the total demand, of institutions that tend to operate through space agencies that aim to strengthen their competitive position in the international framework through advances in scientific research. To achieve this, the agencies systematically contact private companies, which have now drastically reduced the cost of space launches, to be able to send technological devices and professional astronauts into orbit. These two categories of entities are defined as "payloads" and for the purposes of this research they will not be considered for the definition of the demand that follows.

Instead, the analysis will be based on privately funded flights of humans, started in 2001 with Tito's experience on the ISS. However, the definition of space tourist is the subject of a dispute, since the launch of Space Adventures' second customer Mark Shuttleworth, who, having taken some small scientific experiments during his stay, was reluctant to be called "tourist".¹⁴ So, in order to be clear about the purpose of this work, the focus will be specifically on those who can be more properly defined as space tourists: individuals who decide to embark on a journey above the Earth's crust only for recreational purposes.¹⁵ The following paragraphs represent the ground floor of a strategy: a

¹³ <https://www.futuremarketinsights.com/reports/space-tourism-market>

¹⁴ Von der Dunk, F. G. (2011). Space tourism, private spaceflight and the law: Key aspects. *Space Policy*, 27(3), 146-152.

¹⁵ Chang, E. Y. W. (2020). From aviation tourism to suborbital space tourism: A study on passenger screening and business opportunities. *Acta Astronautica*, 177, 410-420.

possible segmentation of the potential customers, based on which targeting and positioning strategies will be provided and eventually their decisional process.

2.1.1 Segmentation and targeting

To implement an efficient communication strategy, the first fundamental step is to divide the market in several parts, each composed by individuals with similar features. In this work, several approaches will be used in order to create a complete segmentation of the market. The first approach consists in a demographic segmentation, based both on age and gender. As regards age, the best possible division results from using 55 as pivot quantity¹⁶, thus dividing the market by age into two parts. The younger segment (18-54) is characterized by a strong penchant for high in arousal experiences to be shared on social media, while seniors (55+) have a propensity for luxury experiences.

Another approach consists in highlighting customers' motivations, clustered to form a psychographic segmentation, whose peculiarity is to better understand why different groups of people decide to purchase a service. Some space explorers would be motivated to undertake such travel because of a lifelong aspiration, linking the launch moment to a childhood dream. Others would look for the fulfillment of their wills linked to curiosity about the unknown, favoring features like the possibility to see what they have never seen before, mostly the curvature of the globe¹⁷, while adventure-seekers are motivated by their propension for adrenaline adventures.

Using the dimension of readiness to embrace this novel experience, it is possible to divide the market between pioneers and followers within a behavioral segmentation: pioneers are the early adopters, willing to take risks and pay a premium for the privilege. On the other hand, followers are a segment whose demand is more significant in a mature phase of a firm's life cycle, and they commonly wait for safety records to be established.

Despite the analyzed companies are all based in the same country, tourism industry goes far beyond national borders, making geographic segmentation crucial as well: different regions may exhibit different levels of interest, cultural preferences, and economic capabilities.

Finally, there's the lifestyle segmentation, based on which marketers can distinguish two different approaches to a space tour: a luxury and relaxing event or an adventurous occasion for the

¹⁶ Oh, H., Parks, S. C., & Demicco, F. J. (2002). Age-and gender-based market segmentation: A structural understanding. *International Journal of Hospitality & Tourism Administration*, 3(1), 1-20.

¹⁷ Reddy, M. V., Nica, M., & Wilkes, K. (2012). Space tourism: Research recommendations for the future of the industry and perspectives of potential participants. *Tourism Management*, 33(5), 1093-1102.

ones looking for extreme and challenging experiences pushing physical and mental limits in a hostile environment.

Understanding all these features allows marketers to create compelling narratives that resonate with each segment, crafting experiences that align with their individual aspirations. Nevertheless, marketing strategies need to be sustained by an accurate selection of the segment in order to better focus on those ones who can represent a profitable cluster through targeting. Some suppliers have indeed the vision to make anyone be able to travel in the space by improving accessibility to space, but to do so they must start with a certain segment, which will be the target market. Moreover, potential interest is not sufficient to define a market to address marketing investments if, for instance, the existence of the product is not known, there's not enough income to purchase it, there's not enough access to it or structural issues like physiological problems or cultural barriers that inhibit its use or consumption with adequate frequency and "dosage": the target market is the disposable market fraction a firm decides to address.¹⁸

Specifically, Virgin Galactic is positioned as a premium space tourism brand that caters to luxury and lifestyle-oriented customers: their targeted customers belong to senior segment, looking for a relaxing experience and whose aspiration for space has been built into them for a long time. People from this cluster also want to embark as the ultimate status symbol. Consequently, the company tends to build narratives concerning lifelong interest in this field.

Blue Origin has targeted adventure-seekers looking for short and high-octane flights, but with the introduction of the new Blue Glenn they are looking forward to growing their market share by attracting those customers who are curious about the unknown, by bringing them to places far away from Earth's orbit.

SpaceX objective are space enthusiasts, whose desire for a space trip is particularly strong. Through their new Starship, they want to attract adventurous tourists with a unique experience. Those tourists tendentially consider the risk of a lunar trip as a non-relevant feature, compared to the novelty and the excitement that it has.

Unlike Virgin Galactic and Blue Origin, Musk's company targets pioneers instead of followers, keeping the second ones informed about their progresses in each of the previously mentioned fields it operates in. Indeed, the other two have a more specific focus on the customer segments defined as

¹⁸ Kotler, P., Keller, K. L., Ancarani, F., & Costabile, M. (2014). *Marketing management 14/e*. Pearson.

followers for their more marked risk aversion, building narratives that this study is going to deepen in the next paragraphs: pioneers need messages highlighting exclusivity and innovation, while followers need reassurance of safety and reliability. Offering superior warranties and utilizing large numbers of distributors may not have particularly strong positive main effects on sales growth among benign environment pioneers.¹⁹

For what concerns nationality-oriented targeting, the three service providers implicitly address wealthy nations.

To summarize, Richard Branson's firm is focusing on luxury customers pushed by a lifelong dream of a space launch, Bezos' one positions itself as a solution for both curious individuals and adventure-seekers, while SpaceX targets pioneers of extreme tourism.

2.1.1. Customers' decisional process and behavioral intention

The emergence of space tourism as a burgeoning industry presents a unique and exhilarating context for examining the role of the customer's decisional process in marketing communication plans for services. Unlike traditional products, space tourism services are a novel category, characterized by their intangible and awe-inspiring nature. To craft effective marketing strategies in this realm, it's crucial to grasp how potential space tourists navigate their decision-making journey. This paragraph will provide readers with a decisional process that is broadly valid for the target customers mentioned in the previous part, followed by a focus on those aspects of space tours that a type-customer would consider before the purchase of these services.

Space tourism represents a paradigm shift in how consumers perceive leisure and adventure. The decisional process in this context follows a trajectory similar to that in other service industries, but with distinctive nuances. The model that will be used to build this process is the Three-Stage Model of Service Consumption.²⁰ It is composed by different phases: pre-purchase, service encounter and post-encounter. Since the work is now focused on the decision-making step, the stage to which more attention will be paid is the first one, divided itself in four crucial moments: the awareness of a need, information search, evaluation of alternatives and eventually the purchase decision.

¹⁹ Covin, J. G., Slevin, D. P., & Heeley, M. B. (2000). Pioneers and followers: Competitive tactics, environment, and firm growth. *Journal of business venturing*, 15(2), 175-210.

²⁰ Wirtz, J., & Lovelock, C. (2016). *Services marketing: People, technology, strategy*. World Scientific.

The journey begins with problem recognition, wherein potential space tourists recognize their yearning for an extraordinary experience. The awareness of the need for a certain service, space tourism in this case, can be triggered by both unconscious minds as internal factors and external sources like the service firm's marketing activities. Internal triggers can be, for instance, personal identity or aspirations, on the basis of which a market segmentation has been previously built: these triggers can be dreams or an adventurous lifestyle, leading to the willingness to undertake a space trip. Indeed, demand is preceded by a want, generated by a need. Marketing communication plans for space tourism must tap into these deep-seated aspirations and cultivate a sense of wonder or adventure, in order to position the firm as the best solution for the need of the target customers.

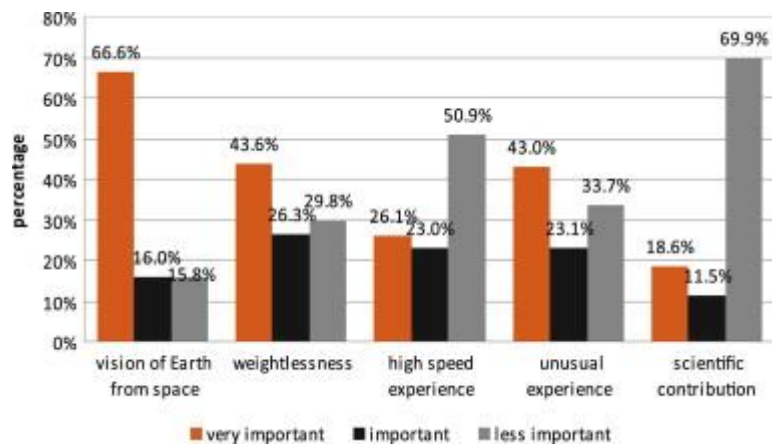
Once the cosmic dream is awakened, information becomes the guiding star. Prospective space tourists embark on extensive information searches, aiming to understand the intricacies of space travel. Marketing communication plans should provide a constellation of content, from detailed technical specifications to immersive virtual tours. Virgin Galactic, for instance, leverages an interactive website to offer potential customers a glimpse of the experience, helping them envision themselves as astronauts.

In the third step of the customer decision-making process for space tourism, evaluating alternatives becomes a pivotal task. Potential space tourists must carefully weigh their options, considering factors like destination, cost, duration, and experience. They research various space tourism companies, assessing their safety records, spacecraft technology, and customer reviews, but in space tourism the evaluation of alternatives extends beyond choosing between different providers. It encompasses deciding on the type of experience: suborbital flights with Virgin Galactic or Blue Origin, orbital ones with SpaceX – and Blue Origin in the near future – or even trips on the Moon. Marketing strategies should elucidate the uniqueness of each experience, catering to varying levels of adventure and exploration.

Destination choices prompt potential travelers to assess personal motivations and risk tolerance. Through previous studies about this topic, it is possible to outline several positive and negative factors that turn out to be decisive for prospect and actual target audience. In the moment of the purchase decision, prospect customers process a series of considerations that lead to a purchase behavior that can be positive in case of purchase or negative otherwise. The decision is triggered by both socio-psychological motives to travel to space, called push factors, and specific attributes or characteristics of the product, the pull factors. Push factors have been already deepened while building the different segmentations of the demand. On the other hand, as relevant pull factors, the type of experience (orbital or sub-orbital space travel) as mentioned before, health and training requirements,

safety issues, type of launch and design of the spacecraft (e.g.: number of window seats), number of passengers onboard, reputation of the operating company, location of spaceports, reliability statistics, and environmental credentials are the relevant ones. Such aspects have been investigated by Reddy, Nika and Wilkes, who collected qualitative data from British residents in Southern England, asking them which of the several factors they considered to be the most important during the decision-making process: safety and amount of training required have resulted to be the most selected ones.¹⁷ This result highlight the fact that risk and side-activities need a specific focus, provided ahead in this paragraph and in the following chapter. Regarding customers' features, gender, age, and the extent of other risk-taking behavior typically play an important role in influencing choice. Concentrating only on those specific features that can be intrinsically considered as positive for an approaching behavior, males are broadly more likely to undertake a space trip, despite women commonly play a more significant role in the family and couple holiday decision making process. Note that businesses like cruises already focus their marketing efforts to target females due to this dynamic. Moreover, despite age is positively correlated with income, older potential travelers are more skeptical: this may be mainly due to physical limitations that increase over the years. The tendency for other risky activities in every day's life makes customers have a preference for orbital flights rather than suborbital ones²¹: it is possible, to some extent, to predict an approach or avoidance by a prospect customer by considering the level of risk in the activities they have participated in. Once determined what personal features contribute to form a positive behavior towards purchase within space economy, particular relevance must be given also to the key characteristics of space travels that play an important and motivational role within the stage of purchase decision. As well as the aforementioned pull factors, such features have been investigated by Reddy, Nika and Wilkes, asking the same respondents to evaluate the importance of each of the following aspects of a space tour. These are, in order of relevance, the unparalleled view of the Earth from space, the possibility to feel weightlessness, the uniqueness of the experience and the high speeds.

²¹ Crouch, G. I., Devinney, T. M., Louviere, J. J., & Islam, T. (2009). Modelling consumer choice behaviour in space tourism. *Tourism management*, 30(3), 441-454.



[Fig.2]: Ratings of 5 motivational variables.

Source: Reddy, M. V., Nica, M., & Wilkes, K. (2012). *Space tourism: Research recommendations for the future of the industry and perspectives of potential participants*. *Tourism Management*, 33(5), 1093-1102.

It is worth noting that scientific contribution is the least important motivation among potential space tourists, giving evidence of the need, in a marketing work like the present one, to separate science enthusiasts from the concept of space tourist, as previously specified in paragraph 2.1. After having mentioned the several potential motivations for customers to join space trips or adventures, inhibitors need to be deepened as well. These are the aspects of the service that potential travelers consider when deciding whether or not to purchase and that have a negative impact on the decision. There are two reasons why understanding perceived risk is crucial for selling a space trip. The first one is because of the nature of this type of service: being an innovative experience, a tour of the space has a considerable number of attributes that are high in experience, like weightlessness and the view of the planet, and in credence, like safety, environmental impact, and health spinoffs. Because of these attributes, it is relatively arduous for a potential customer to preview what the experience would be like. The other reason comes from a possible application of the Cumulative Prospect Theory, a model for descriptive decisions under risk and uncertainty ²², to the sector of space economy. One of the

²² Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and uncertainty*, 5, 297-323.

aspects of this theory is the “loss aversion”, which implies that “losses loom larger than gains”²³. This theory has been formed to explain consumers’ evaluation of an outcome in terms of gains and losses, but it can be translated in the effects motivations and risks have on customers’ behavioral intention²⁴. In other words, during the decision-making process, potential clients overweigh risk and underestimate motivational factors, thus forming a systematic irrational asymmetry towards inhibitors. In the decision-making process, a customer faces a series of possible consequences that could follow the purchase or uncertainties about the outcome and satisfaction given by the service. Each of these have a probability in prospect customers’ minds: the higher the probabilities of these negative repercussions, the higher the level of customer’s perceived risk. Marketers usually discern seven types of risk: in the case of space tourism, the most relevant ones are financial, psychological and safety risks. First and foremost, with regard to financial risk, potential space tourists have been found to be highly price sensitive by Crouch’s research²². To date, the ticket price for a suborbital flight with Virgin Galactic is between \$250,000 and \$450,000²⁵, while an orbital or lunar mission has a cost that is similar to that for sending an astronaut on the International Space Station, Musk said, which is in the tens of millions²⁶. Marketing communication plans must justify price, still high due to the introductory and, in some cases, embryonic phase of this product, by emphasizing the unparalleled value of the experience. For what concerns psychological risk, the risk of anxiety and psychological stress, space tourism involves venturing into a realm that few have experienced. Potential tourists may grapple with the fear of the unknown, stemming from concerns about the safety and unpredictability of space travel. To mitigate this risk, firms in the space economy can employ comprehensive educational marketing campaigns. These campaigns should demystify space travel, provide information on safety measures, and offer virtual reality experiences that simulate the journey, thus making it more familiar and less intimidating. Moreover, being confined to a spacecraft for an extended period and the sense of isolation in the vastness of space can trigger claustrophobia and loneliness. To counter these psychological barriers, space tourism companies should emphasize the spaciousness of their cabins, incorporate large windows for breathtaking views, and promote the

²³ Kairies-Schwarz, N., Kokot, J., Vomhof, M., & Weßling, J. (2017). Health insurance choice and risk preferences under cumulative prospect theory—an experiment. *Journal of Economic Behavior & Organization*, 137, 374-397.

²⁴ Olya, H. G., & Han, H. (2020). Antecedents of space traveler behavioral intention. *Journal of Travel Research*, 59(3), 528-544.

²⁵ <https://economictimes.indiatimes.com/news/international/us/virgin-galactic-offering-space-tourism-tickets-worth-over-450k-long-waitlist-all-you-may-want-to-know/articleshow/101403141.cms?from=mdr>

²⁶ <https://www.cntraveller.in/story/how-much-did-japanese-billionaire-yusaku-maezawa-pay-to-be-spacexs-first-tourist-to-the-moon/>

communal aspect of the journey where tourists can socialize with fellow travelers and trained astronauts. Such marketing strategies can help alleviate concerns related to confinement and isolation. The last type of risk addressed by this work is the safety one: safety is paramount in space tourism, and consumers need assurance that their lives will not be jeopardized during these adventures. The most perilous moments of space travel are during launch and reentry. To mitigate these risk perception, firms in the space industry can emphasize their commitment to rigorous testing, state-of-the-art technology, and adherence to strict security protocols. Marketers can showcase the qualifications and experience of their astronauts, highlight the redundancy systems in place, and even offer insurance packages specifically tailored to space tourists to reassure potential customers. For Musk's Bezos' and Branson's companies, safety issues are the hardest ones to deal with from a marketing point of view, since perceived safety is closely tied to the positive results of previous launches, meaning that operative mistakes in this industry are capable of heavily impact on a brand reputation. With the aforementioned crash in 2014, Virgin Galactic almost made not only the firm itself, but the whole space tourism industry lose its legitimacy in stakeholders' eyes. Moreover, the debated safety of these trips is further questioned whenever accidents occur in sectors even just perceived as related to this one, as in the case of the "Titan" submarine, a tragedy that played the role of a very dangerous media event for space travel suppliers, as the common features between a space tour and a submarine one (wealthy customers, tight spaces, far-flung destinations) have led to an association in terms of dangers, making doubts and concerns being brought to light once again ²⁷.

In the ever-evolving landscape of consumer behavior, understanding the decision-making process of customers is paramount for any company looking to expand its clientele. This importance is especially pronounced in the burgeoning industry of space tourism. Throughout this paragraph, we have delved into the intricate layers of consumer decision-making, shedding light on the multifaceted factors that influence individuals when choosing to embark on the journey beyond Earth. Space tourism is a unique sector, offering experiences that were once confined to the realms of science fiction. As companies compete to usher in this new era of exploration, comprehending the intricacies of consumer decision-making becomes a linchpin for success. The journey to the stars, in many ways, mirrors the journey that consumers undertake when making choices about their travel experiences. Just as astronauts prepare rigorously for their missions, customers engage in a deliberative process before committing to a space adventure. The decision-making process, with its stages of problem

²⁷ <https://www.latimes.com/business/story/2023-06-23/the-titanic-sub-disaster-spotlights-another-extreme-venture-space-tourism#:~:text=SpaceX's%20new%20space%20tourism%20offer,citizens%20even%20higher%20into%20space>

recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior, is not only a framework but a roadmap for businesses in the space tourism industry. It is a guide that helps understanding how potential space tourists identify their needs and wants, search for information about available options, weigh the pros and cons, and ultimately make a decision that aligns with their aspirations and expectations. Moreover, the understanding of consumer decision-making extends beyond its theoretical significance. It serves as a bridge connecting the realms of market research, product development, and marketing communication. The insights gained from studying how consumers decide to embark on a space journey can inform the design of packages and experiences that resonate with their desires. It can guide companies in crafting marketing campaigns that appeal to the emotional and rational aspects of decision-making, emphasizing the unique value propositions of space travel. In the world of space tourism, the stakes are high, and the competition is fierce. Those who grasp the intricacies of consumer decision-making will be better equipped to stand out in a crowded market. By recognizing that consumers are not merely passengers but active participants in the journey, companies can tailor their offerings to meet the diverse preferences and motivations of potential space tourists.

It is evident that understanding the decision-making process of customers is not just an academic exercise but a strategic imperative. In the context of space tourism, this understanding serves as the foundation upon which successful business ventures are built. It allows us to appreciate the aspirations, fears, and dreams that drive individuals to venture far away from Globe's confines. In the subsequent part of this work, we will explore the practical implications of this understanding, delving into the world of marketing communication for commercial space travel. We will investigate how businesses can effectively convey their value propositions to potential customers, harnessing the power of consumer decision-making insights to create compelling narratives and experiences.

2.2 Strategic implications: communicating innovation.

Among services in general, we can distinguish those that can be bought impulsively and those that, instead, require a greater commitment from the consumer to avoid making a wrong choice. A space journey undoubtedly belongs to the second category: the decision-making process, which has been previously addressed, becomes relevant not only for the provider, but for the customer himself, who will take time and energy to be sure to choose well. In this context, communication plays a fundamental role, as it is potentially able to shape clients' approach to the service offered. Underlying this statement is the concept of Service Marketing Communication Funnel, through which any message can slide and influence prospect and actual customers in the three stages of the service

consumption: in fact, according to AIDA²⁸ and Hierarchy of Effects²⁹ models, referred to the single stage of the pre-purchase (awareness, information search, evaluation of alternatives and purchase decision) dividing it in cognitive, affective and behavior stages, communication assumes different roles to guide consumers towards the purchase decision along each of those stages and the single steps within.²⁰

In the modern consumer landscape, there is a growing demand for extraordinary and groundbreaking experiences. Within the space tourism industry, a substantial portion of the target audience unequivocally exhibits a propensity for seeking innovative and transformative experiences. This inclination underscores the pressing need for strategic marketing communication to harness the immense potential of this emerging market: within the “innovation-seekers” segments, which are substantially pioneers, the effect of innovativeness on attitude towards space travel is mediated by perceived novelty.³⁰

Efficiently communicating innovation within the space tourism industry is crucial for several compelling reasons. Firstly, it plays a pivotal role in creating market awareness. Space tourism services often introduce new technologies, safety measures, and experiences that consumers may not be familiar with, making effective communication essential for creating awareness and understanding among the target audience regarding these pioneering advancements.

Secondly, communicating innovation is central to building anticipation. Innovation inherently sparks excitement and eagerness among potential customers. By employing astute communication strategies, space tourism companies can stoke anticipation and generate interest in upcoming offerings, thereby cultivating enthusiasm and demand.

Moreover, it is a powerful tool for differentiation. In a fiercely competitive market landscape, companies that adeptly communicate their innovative features and offerings can distinguish themselves from their rivals. This differentiation can be pivotal in attracting and retaining customers, establishing brand loyalty, and gaining a competitive edge.³¹

Additionally, communicating innovation enhances the perceived value of space tourism services. Innovative features and experiences can significantly elevate the perceived value, justifying

²⁸ Stands for “Awareness, Interest, Desire, and Action”

²⁹ Extension of the AIDA Model; it includes steps of Awareness, Knowledge, Liking, Preference, Conviction and Purchase

³⁰ Chang, Y. W. (2017). A preliminary examination of the relationship between consumer attitude towards space travel and the development of innovative space tourism technology. *Current Issues in Tourism*, 20(14), 1431-1453.

³¹ Semuel, H., Siagian, H., & Octavia, S. (2017). The effect of leadership and innovation on differentiation strategy and company performance. *Procedia-Social and Behavioral Sciences*, 237, 1152-1159.

higher price points and positioning the offerings as premium, must-have experiences. It reassures potential customers and mitigates their risk perception, as space tourism inherently carries an element of risk perception, as the work stated before. Effective communication can directly address safety concerns and elucidate how innovative technologies and rigorous safety protocols conspire to mitigate these risks, thereby bolstering consumer confidence.

To successfully communicate innovation in the space tourism industry, companies should consider a range of strategies. Clear and transparent messaging is vital, using unambiguous language to explain the innovative aspects of their services, avoiding technical jargon or complex details that might confuse the audience. The use of simple and accessible terminology must, however, be commensurate with the interests of the audience, who are relatively more knowledgeable and often experts in this area. Indeed, while providers want to expand the market, involving people that are not experts and using approach techniques towards them, it is also necessary to maintain the current interest by those who are already well-informed regarding details and technical aspects inherent in the product. The level of technical expertise of current supporters varies depending on the company: Blue Origin and especially SpaceX have real fans experienced in space technologies, which therefore expect technicalities and detailed information, while Virgin Galactic's target is more general, because of the more easily marketable product category they offer. It is therefore crucial for the three companies to have a communication technique that is intermediate, especially in the case of the first two mentioned.

Visual communication is equally important. Employ visually captivating graphics, videos, and interactive content to vividly illustrate innovative features and experiences. This makes complex concepts more accessible and engaging, especially for service providers whose product contains several intangible products and therefore more difficult to evaluate from prospect clients' prospective. To this aim, a strong presence in a predominantly visual social network such as Instagram is vitally important.

Storytelling holds a pivotal role in the innovation process, impacting it from the very inception of creative ideas all the way through their execution and the endorsement of both current and prior innovations. During the early phases of innovation, effective storytelling becomes paramount, as it becomes instrumental in securing approval for groundbreaking concepts, capturing the attention and curiosity of others, and setting the stage for future refinements and advancements. As the innovation process progresses to its later stages, storytelling continues to be a potent tool. It serves not only to promote innovation to wider audiences through various channels but also as a catalyst for stimulating forthcoming innovative endeavors. The art of storytelling hinges on the quality of the narrative, the

substance of the story itself, and the skillful adaptation to resonate with the intended audience, all of which are central to the process of generating enthusiasm and garnering support.³²

Customer testimonials and reviews add authenticity. Sharing positive feedback from those who have experienced the innovation firsthand can build trust and credibility.

Lastly, consistency across communication channels is essential. The three competing firms ensure that the message of innovation resonates consistently across websites, social media platforms, press releases, and marketing materials. This practice is called Integrated Marketing Communications (IMC). IMC serves to unite and strengthen all forms of communication in order to convey a robust brand identity. This entails ensuring that a company's various media outlets convey consistent messages with a cohesive look and feel. Consequently, the communications emanating from diverse media channels and communication strategies coalesce into a unified, overarching message regarding the service firm and its products.

Having explored the significance of communicating innovation and effective strategies in the context of space tourism marketing, it is now imperative to delve into two relevant aspects of marketing communication for these enterprises: Corporate Social Responsibility and previous experiences, both crucial in shaping the narrative and appeal of space tourism ventures.

2.2.1. Corporate Social Responsibility and brand reputation

Potential customers of a service like space tours, driven by an attraction to novelty and innovation, seek innovation not only in the product but in the overall business plan. The allure of venturing into space, exploring new frontiers, and experiencing the unknown appeals to their sense of adventure and desire for the extraordinary. As they consider investing in such an unconventional endeavor, they are not only interested in the technological advancements that enable space travel but also in the sustainability and ethics underpinning the business. In today's world, innovation goes hand in hand with responsibility. Customers are increasingly conscious of the impact businesses have on society and the environment. Therefore, an essential aspect of any innovative business plan is Corporate Social Responsibility (CSR).

Corporate Social Responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders. CSR is generally understood as being the way through which a company achieves a balance of economic, environmental, and social imperatives (“Triple-Bottom-Line-Approach”), while at the same time

³² Sergeeva, N., & Trifilova, A. (2018). The role of storytelling in the innovation process. *Creativity and Innovation Management*, 27(4), 489-498.

addressing the expectations of shareholders and stakeholders.³³ Blue Origin states, as primary concept, that its mission and vision themselves concern environmental sustainability: “*Blue Origin was founded with a vision of millions of people living and working in space for the benefit of Earth. Blue Origin envisions a time when people can tap into the limitless resources of space and enable the movement of damaging industries into space to preserve Earth, humanity’s blue origin.*”³⁴

The implementation of interactive corporate communication has the potential to significantly impact Corporate Social Responsibility (CSR) outcomes. It can bolster message credibility and foster a stronger sense of identification with the company, particularly when stakeholders perceive this communication as interactive. To clarify, stakeholders should feel that the company actively seeks their opinions, embracing two-way communication, and empowers them, by promoting symmetrical communication, in the context of CSR initiatives. Companies can strategically harness this potential by emphasizing CSR in their communications with stakeholders, using channels that authentically facilitate stakeholder engagement and feedback. Such meaningful interactions hold the potential to not only strengthen corporate reputation but also encourage stakeholders to share CSR-related information with others and recommend the company based on its commitment to responsible business practices. Examples of interactive marketing channels are video, comments, visuals, infographics, games, blogs, email, and social media. Conversely, it's important to note that negative evaluations or criticisms from stakeholders can undermine corporate reputation, potentially overshadowing the positive impacts of perceived interactivity in CSR communication. In summary, interactivity and the presence of critical comments appear to exert opposing influences on a company's CSR reputation.³⁵

It's not just about reaching for the stars; it's about doing so in a way that benefits the planet and future generations. Innovators in the space tourism industry must recognize this, align their business plans with CSR principles, and contribute positively to the world as they explore the boundless possibilities of space.

³³ United Nations Industrial Development Organization: <https://www.unido.org/our-focus/advancing-economic-competitiveness/competitive-trade-capacities-and-corporate-responsibility/corporate-social-responsibility-market-integration/what-csr>

³⁴ <https://www.blueorigin.com/about-blue>

³⁵ Eberle, D., Berens, G., & Li, T. (2013). The impact of interactive corporate social responsibility communication on corporate reputation. *Journal of business ethics*, 118, 731-746.

2.2.2. Virtual reality and inclusivity

Corporate Social Responsibility extends beyond environmental sustainability, encompassing social responsibility as well. In the context of the emerging frontier of tourism beyond our planet, where competition is expected to drive ticket prices down, it will likely remain accessible primarily to an elite clientele for several years. This situation further exacerbates the existing issue of wealth disparity, making this innovative industry a sub-theme within the broader problem of income inequality.³⁶

This scenario poses a significant risk to the brand reputation of the three leading companies in this sector. To mitigate this challenge and demonstrate a commitment to social responsibility, these companies might consider introducing virtual journeys to the cosmos as part of their offerings.

These virtual experiences offer several compelling advantages. First and foremost, they provide an affordable alternative, fostering the democratization of access to the cosmos³⁷. This accessibility can bridge the gap between the privileged few who can afford physical journeys to space and a wider, economically diverse audience.

Moreover, the timing for introducing these virtual journeys is opportune. The COVID-19 pandemic has normalized virtual tourism experiences, and people have become more accustomed to exploring destinations, even those beyond Earth, from the comfort of their homes³⁸. This increased familiarity with virtual experiences presents a valuable opportunity for companies operating in this industry to tap into this growing market.

Beyond its commercial potential, these virtual experiences also hold promise in the realm of education. Incorporating simulated space journeys into educational programs can spark interest in space exploration among new generations. It can serve as a valuable tool for science education, inspiring students and fostering a deeper understanding of space science and technology, thus creating benefit for the perception of the public towards the brand.

2.2.3. The power of previous experiences

³⁶ Toivonen, A. (2022). Sustainability dimensions in space tourism: The case of Finland. *Journal of Sustainable Tourism*, 30(9), 2223-2239.

³⁷ Damjanov, K., & Crouch, D. (2019). Virtual reality and space tourism. In *Space Tourism* (Vol. 25, p.117). Emerald Publishing Limited.

³⁸ Sarkady, D., Neuburger, L., & Egger, R. (2021, January). Virtual reality as a travel substitution tool during COVID-19. In *Information and Communication Technologies in Tourism 2021: Proceedings of the ENTER 2021 eTourism Conference, January 19–22, 2021* (pp. 452-463). Cham: Springer International Publishing.

In the dynamic landscape of space travels, innovative marketing strategies are paramount to capture the attention and trust of potential customers. One particularly effective approach adopted by space tourism companies is the dissemination of experiences from their pioneer clientele. This technique is strategically targeted towards the followers.

The rationale behind this focus on followers is rooted in the concept that satisfying the needs and desires of pioneers, can serve as a powerful assurance for the less daring, the followers. By showcasing the positive outcomes and exhilarating adventures of pioneers, space tourism companies significantly reduce the perceived risk that followers associate with their pre-purchase decisions. This reduction in perceived risk is a key driver in the decision-making process of potential customers, particularly those who are traditionally less receptive to the introduction of a new product.

Effectively communicating this innovative offering in such a manner that it positively impacts the customer decision-making process for this segment of potential clients is a strategic imperative. Through leveraging the experiences of pioneers, companies can bridge the gap between the known and the unknown, instilling confidence in followers and ultimately enticing them to embark on their own extraordinary journeys beyond the stars.

To successfully employ a marketing technique such as sharing pioneer experiences, space tourism companies must establish a profound sense of loyalty within their customer base, to the extent that these customers become integral communicators for the organization itself.

The foundation of effective communication with followers hinges upon the cultivation of robust relationships with pioneers. It is imperative to nurture a sense of belonging and shared purpose within this exclusive group of trailblazers. By doing so, companies not only gain a deeper understanding of their customers' needs and preferences but also instill a sense of pride and ownership within pioneers. This sense of ownership often leads pioneers to willingly act as advocates, sharing their remarkable journeys and adventures with followers and the wider audience.

In essence, the communication aimed at followers begins with the creation of these strong bonds with pioneers. Through these relationships, space tourism companies can harness the power of authentic, word-of-mouth endorsements, elevating their marketing efforts to unprecedented heights.

In this sense, Virgin Galactic is strongly active and systematically uses this marketing technique through its channels.

They have astutely allocated a dedicated section of its website to the creation of an engaging "Hall of Fame," mapping every individual who has had the privilege of venturing into the celestial realm with them. Within this digital repository there's a series of biographical insights of each tourist

in the list. This section of the website serves a twofold purpose, deeply enhancing the overall customer experience.

Firstly, this carefully curated digital gallery offers prospective clients a unique opportunity to forge connections and find resonance with the lives and passions of those who have already undertaken these journeys. By showcasing a diverse clientele representing various backgrounds and devoid of any prerequisite engineering knowledge, Virgin Galactic magnifies the accessibility and inclusivity of this awe-inspiring adventure. Beyond this, the concept extends into the enduring sense of community cultivated by Virgin Galactic. As eloquently articulated on their website, "you will also gain membership to a unique and long-established global community of Future Astronauts with a shared love of adventure and passion for positive change."³⁹ This phrase underscores the lasting impact of the experience, emphasizing that becoming a part of this community transcends the boundaries of time, offering an enduring connection to a remarkable global fellowship. In essence, Virgin Galactic's astronauts' community serves not only as a tribute to those who have embarked on this cosmic journey but also as a bridge connecting the aspirants of the future with the pioneers of today. It symbolizes accessibility, inclusivity, and a profound sense of community that continues to inspire and unite individuals from all walks of life, fostering a shared love for adventure and a collective passion for driving positive change in the world.

Moreover, interviews to ticket buyers are shared on social networks by the company: these interviews emphasize the passengers' past, as well as the information on their website, and the feelings experienced during the journey.

2.3 Communication and brand equity: a consumer metric

In the field of marketing, the impact of communication strategies on brand equity is a pivotal component in achieving sustained success. The Brand Value Chain¹⁸, categorized within the realm of consumer metrics, offers a comprehensive theoretical framework for understanding this intricate relationship. According to this model, the brand value chain consists of several stages, with the initial two being of particular relevance: the marketing program, inclusive of the communication plan, and its subsequent influence on the customer mindset.

The marketing program, notably encompassing the communication plan, serves as the foundation upon which brand equity is built. It is through strategic communication that a brand engages with its audience, conveying its essence, values, and unique selling propositions. By crafting

³⁹ <https://brochure.virgingalactic.com/membership/>

compelling narratives, tailoring messaging, and employing effective channels, marketers can establish a brand identity that resonates with consumers. This initial stage is not merely about disseminating information; it is about creating a brand image that captivates and persuades.

Following the implementation of the marketing program, the subsequent stage in the brand value chain involves the influence on the customer mindset. This pivotal step marks the transition from communication efforts to the perception and attitudes of the target audience. Effective communication strategies shape the customer's mindset, leading to a deeper connection and a favorable predisposition toward the brand.

In the forthcoming chapter, the work will delve into a closer examination of how these communication tactics, outlined in the preceding paragraphs, wield the power to significantly enhance potential customers' perceptions of the brand. This exploration will be conducted through a sentiment analysis, shedding light on the intricate interplay between the right marketing communication strategies and the development of a robust brand presence in the marketplace, thereby providing valuable insights into the mechanisms that bolster brand equity.

3 SENTIMENT ANALYSIS OF VIRGIN GALACTIC

This Chapter is entirely dedicated to the development of a sentiment analysis.

The method with which it was made is based on artificial intelligence, using as input the comments in the dedicated sections of Instagram, Twitter, and Facebook. The sample is represented by the users of the various platforms that commented the posts of Virgin Galactic, on the three social platforms. The posts considered were selected on two criteria. The first is a chronological one: contents are dated no more than three years to have a recent result and at the same time not restricted. The second selection criterion is content: posts that have as their main focus not companies in the strict sense, but other elements were excluded. The reason for applying this criterion is that the comments of interest should be addressed only to the service provider and not to other elements. An example of post that has been excluded, for the sake of clarity, is that of 3rd September 2023 on the Instagram profile of Richard Branson's company, whose content are condolences on the passing of former New Mexico governor Bill Richardson, who had supported the company during his life. Although such a content is able to also encourage the sharing of thoughts about the company, the focus is definitely shifted to the protagonists of the post, which would make the comments below not related to the research. In case of a content shared by the analyzed company on more than one of the considered social networks, the posts were still taken into consideration for the analysis, since the repetition of a post does not also imply the repetition of its feedback: comments are the statistical unit and are different in number and content. On the other hand, the content of the posts, within this sentiment analysis, is the room where data on these statistical units are manifested and collected.

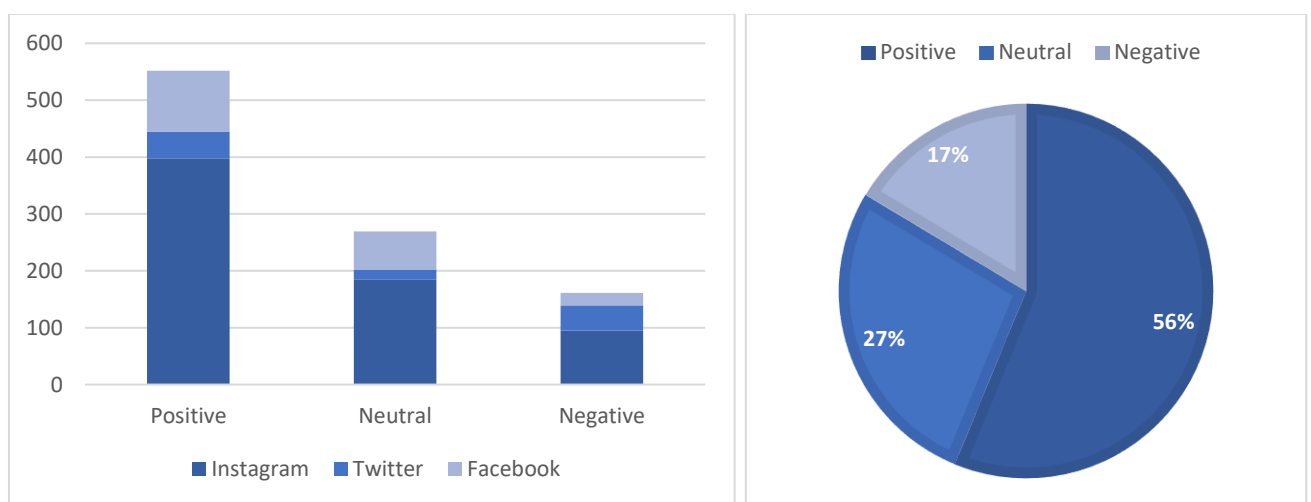
As for the selection of comments, it is entrusted to artificial intelligence, through which comments have been filtered and certain categories that could compromise the goodness of the research, altering the results, have been removed. Specifically, the excluded categories are those of spam, which are irrelevant and unsolicited messages with the purposes of advertising or "phishing", and those in which the subjects commenting are shareholders who express their opinion on the performance of the analyzed company on the stock market, a subject far from the focus of this research.

The statistical results of the analysis have been organized based on the specific communication technique implemented by the company. Then a comprehensive framework has been built through the aggregation of these statistics.

Through this analysis, it will be possible to identify not only target customers' general perceptions towards the company but also those that more specifically concern the application of the single communication techniques investigated in the previous chapter of the work.

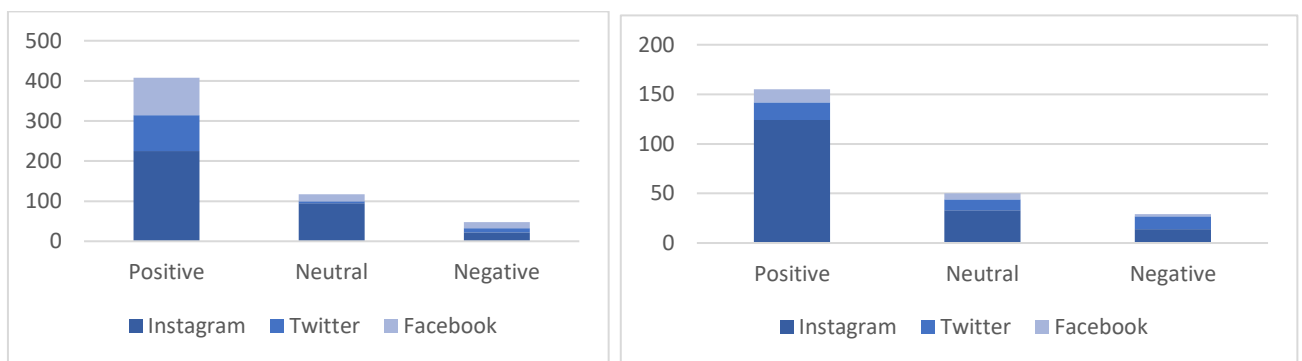
The choice of the statistical unit is justified by the fact that the subject of the research is the investigation of communication strategies and how they impact the customer mindset within the building of brand equity: the customers whose mindset is investigated is a crowd of potential buyers, since, as said before, the objective of the three companies is to enlarge the accessibility to space. The feature of social networks in general of allowing the sharing of thoughts among anyone fits well with this research subject.

The sentiment analysis conducted in this study aimed to examine the impact of various marketing strategies on the perception of a brand by its audience. To begin with, an initial analysis was carried out on a sample of 20 posts, which encompassed a total of 982 comments. The primary objective of this initial data collection was to establish a benchmark against which subsequent results could be compared. The overarching goal of the analysis was to confirm the hypothesis that specific marketing strategies can positively influence customer perceptions of the brand. Notably, these initial 20 posts did not emphasize any of the three strategies under investigation, namely storytelling, corporate social responsibility (CSR), and risk mitigation communication tactics. In essence, these initial results represent the audience's perception of the brand in the absence of storytelling, CSR, and risk mitigation communication.

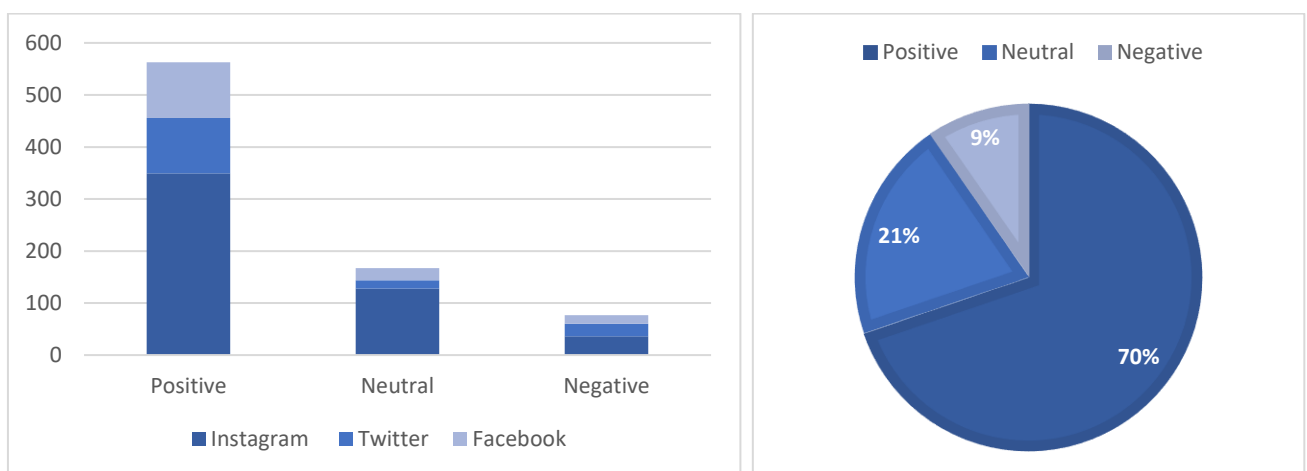


[Fig. 3], [Fig. 4]: Benchmark sentiment analysis for Virgin Galactic

Subsequently, the comments beneath posts addressing the mitigation of perceived risks by potential customers were gathered and categorized into two subgroups. The first subgroup pertained to the habitability of cabins and the potential for interaction with other passengers, while the second subgroup focused on sharing experiences of those who had previously utilized the service. These two subcategories, as mentioned earlier, constitute the posts aimed at mitigating perceived risks among potential customers. A total of 807 comments from 19 posts were analyzed, with 13 posts relating to the cabin subcategory and 6 posts pertaining to the previous experiences subcategory. Notably, there was a noticeable difference in the percentages of positive comments in this second analysis compared to the first. The positive comments increased by 14%, at the expense of neutral comments (-6%) and negative comments (-8%).

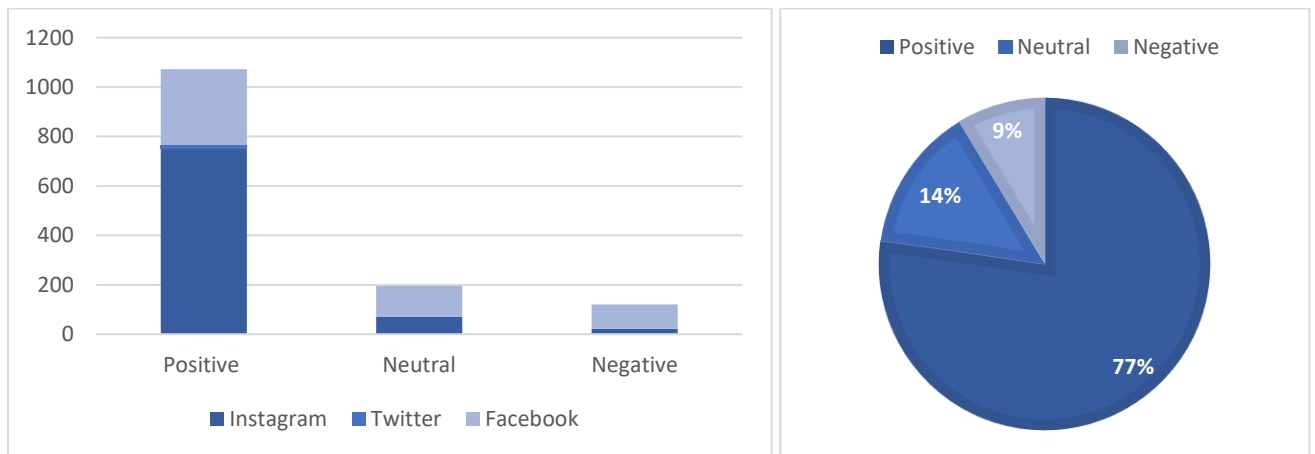


[Fig. 5], [Fig. 6] Bar chart for Virgin Galactic sentiment analysis on posts concerning cabin habitability and previous experiences.



[Fig. 6], [Fig. 7]: Sentiment analysis results for Virgin Galactic's posts that aim to mitigate potential customers' risk perception.

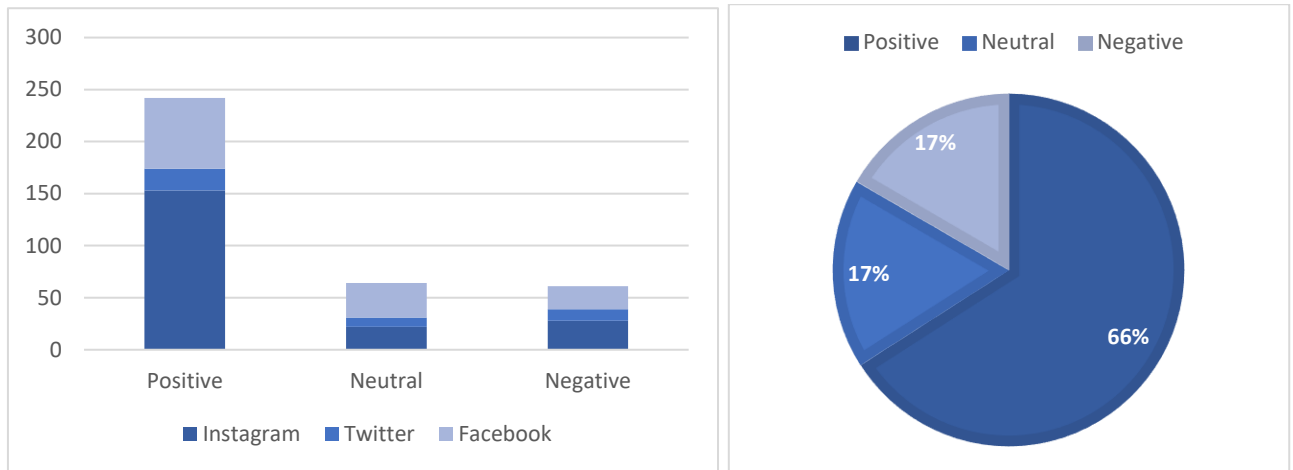
Following this, comments were collected from a specific post that was shared across all three platforms but garnered substantial feedback only on Instagram and Facebook. This post depicted Virgin Galactic as the result of deep-seated ambitions in its owner, Richard Branson, and a series of remarkable achievements that had led it to become the company it is today. This storytelling technique elicited significantly more favorable feedback from users compared to the average feedback received by Virgin Galactic. Out of a sample of 1,389 comments, a remarkable 77% were positive, representing a 21% increase compared to the sample average. This outcome can be interpreted as a testament to the positive impact of associating the brand with a compelling narrative and a well-known figure capable of conveying it, reflecting the importance of entrepreneurial experience in the space tourism sector.



[Fig. 8], [Fig. 9]: Sentiment analysis results for a Virgin Galactic storytelling content

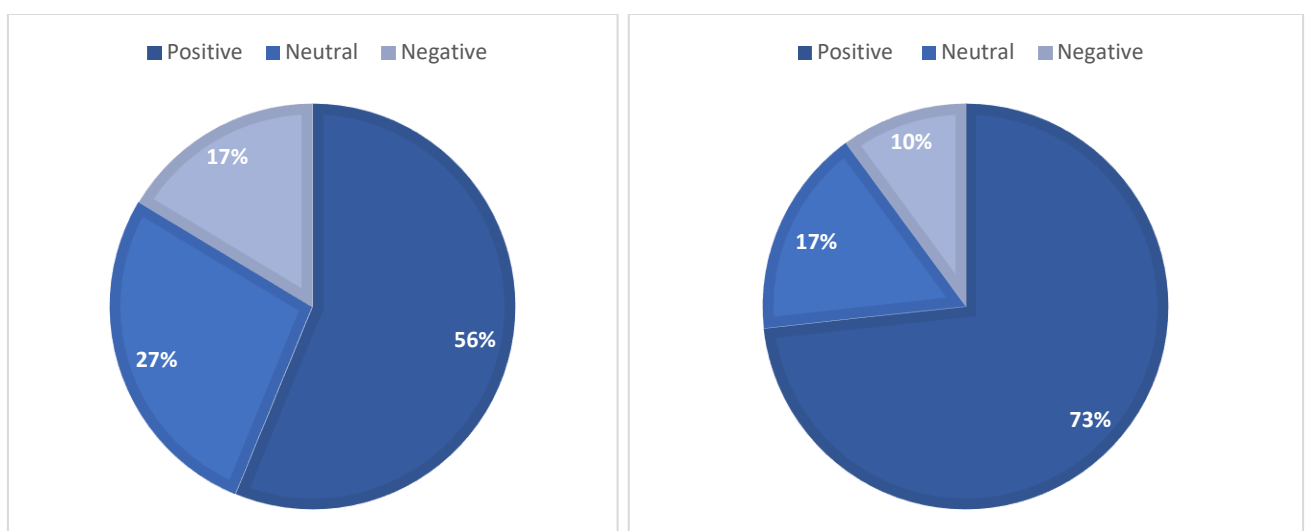
Finally, comments emphasizing the company's commitment to environmental and social sustainability within the context of CSR were examined. Here too, an improvement was observed

relative to the average, with a 10% increase in positive comments within a sample of 367 comments found under 8 posts.



[Fig. 10], [Fig. 11]: Sentiment analysis results for Virgin Galactic's posts communicating CSR.

In summary, the overall results of the sentiment analysis indicate that the 2,563 comments on posts that incorporated the following messaging aspects: 1) communal aspects of rocket cabin, 2) previous experiences, 3) storytelling, and 4) CSR, yielded a higher proportion of positive sentiment (73%) compared to comments on posts that did not incorporate these communication aspects (56%). This result should be interpreted as an indication of the positive impact of these four communicative techniques on the customer mindset towards a brand operating in the space tourism sector, which was the primary focus of this analysis.



[Fig. 4],

[Fig. 12]: Results of the sentiment analysis of Virgin Galactic posts concerning Perceived Risk Mitigation, Storytelling, and CSR

However, it's important to acknowledge certain limitations of this sentiment analysis. Notably, the AI excluded comments made by the same individual within the same post, aiming to avoid undue repetition of sentiments. However, it did not apply the same exclusion criteria for comments made by the same person under different posts. This approach could potentially introduce bias into the results. Therefore, the findings should be interpreted with a degree of caution, as they may be influenced by the behavior of individuals who choose to comment multiple times, with potential effects that could be both negative, in cases of persistent negativity, or positive, in cases of enthusiastic support, for the company.

Overall, the results of this sentiment analysis underscore the significance of strategic brand communication in the space tourism industry. By employing storytelling, CSR initiatives, and risk mitigation communication tactics, companies in this sector can cultivate a more favorable customer mindset. This, in turn, can contribute to enhanced brand loyalty, trust, and ultimately, business success. As the space tourism industry continues to evolve, these findings provide valuable insights for brands seeking to establish a strong and positive presence in this dynamic market.

CONCLUSION

In conclusion, this research has provided a comprehensive overview of the current landscape within the space tourism industry. It has delved into critical concepts surrounding the marketing campaigns of the industry's three major players. By initially examining the state and characteristics of demand, this study established a foundational understanding upon which appropriate communication strategies can be built and have been built, with the objective to enhance brand equity. These communication strategies, carefully designed to align with customer demand profiles, were put to the test to assess their impact on customer perception: through a sentiment analysis of Virgin Galactic, the extent to which the four identified communication strategies positively impact potential customers' perception has been quantified. It's important to note that the strategies under investigation were common within the industry, yet they all originated from firm-specific customer-focused approaches. The resulting managerial implications are substantial. Managers of companies operating in sectors with characteristics akin to space tourism are now equipped with a deeper understanding of communication strategies that yield favorable medium-term brand performance. This knowledge empowers them to make informed decisions regarding marketing campaigns and customer engagement initiatives. As the space tourism industry continues to evolve and expand, the lessons learned here can serve as a blueprint for building and strengthening brand equity in similarly dynamic sectors. In an era defined by rapid technological advancements and shifting consumer preferences, being able to effectively communicate and brand managing is pivotal to achieving sustainable success.

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