

# Government Space Agencies and Their Use of Facebook: A Comparative Study / Shaked Meir Ben Shoushan

## Abstract

Government space agencies play a crucial role in space exploration and the development of innovative space industries. Through various activities such as scientific research, space technology development, and public education, they advance our understanding of the universe and offer solutions to global challenges like climate change and resource shortages. Effective scientific communication with the public is essential for conveying the significance of these activities. In recent decades, scientific communication has evolved into a vital tool for bridging the gap between the scientific community and the general public. This communication helps explain complex scientific issues, raise public awareness on important topics, and encourage public engagement in science. Digital platforms and social media have become central tools in disseminating this scientific information to the wider public.

The literature rarely addresses the relationship between government space agencies and social media, and a comprehensive comparative analysis of these agencies and their digital-social network operations has not yet been conducted. Understanding the messaging strategies that government space agencies choose to employ with citizens and the international audience to promote diplomatic interests and intergovernmental communication is of great importance.

This study focuses on the use of Facebook by government space agencies as a tool for scientific communication and the conveyance of unique messages. The research examines the different strategies employed on Facebook to achieve the agencies' objectives in technological projects, research, education, community development, and the promotion of the space industry. Over 10,000 posts published by 12 government space agencies between January 2021 and January 2023 were analyzed. The analysis focused on aspects such as signal quality, information asymmetry, and audience engagement.

The main research questions were: What types of content do space agencies use on social media? What types of content generate greater audience engagement, and how do they tailor their content to their audience? Is there alignment between the messaging strategies of space agencies on social media and their declared policies in various development areas? What are the differences between space agencies in how they signal to their followers on social media? The study is based on Signaling Theory and examines the use of Facebook as a tool for conveying effective messages and influencing public opinion.

The research utilized both qualitative and quantitative content analysis methods. To identify patterns and trends in the use of Facebook as a tool for scientific communication, quantitative content analysis was performed using descriptive and inferential statistics. In the qualitative analysis, posts were categorized into different content categories: 1) Research and development of technological projects; 2) Education and community development; 3) Promotion of the space industry; 4) Development of international relations. Distinctions were made between posts dealing with local issues and those addressing international issues. Distinctions were also made between types of posts: textual posts (statuses), posts with links, posts with images, or video posts. Audience engagement was measured by the number of likes, comments, shares, and total interactions. The study also examined the relationship between each space agency's annual budget and the type of content they publish, as well as the relationship between the number of likes on Facebook pages and the number of followers with the level of interaction with the posts by the audience.

## **Research Findings**

Government space agencies use Facebook as a central tool for communicating with the public. Images are the most common type of content in statuses. Video posts generated higher user engagement. A significant positive correlation was found between the number of likes, comments, and total interactions with posts published by space agencies and the total number of likes on their Facebook pages, the number of followers, and the annual budget. A significant positive correlation was also found between the space agency's budget and the number of

interactions. Higher-budget space agencies tended to use more video posts, which generated more audience engagement.

It was found that the quality of signals significantly influences audience engagement. Posts on international topics tended to receive more positive responses and attract more engagement compared to posts on local topics. Posts with videos and images received more comments, likes, and shares and created more interactions compared to statuses. Analysis of the most popular posts shows that the central topics receiving public attention are innovative technological projects, international collaborations, and scientific research.

The findings indicate partial alignment between social media messaging strategies and the declared policies of space agencies. It appears that the agencies tailor their communication strategies to the nature of social platforms and audience preferences. The area of education and community development, including scientific communication and public information dissemination, was found in 52% of popular posts. The second area that space agencies focused on in posts is research and development of technological projects. Posts in the field of developing international relations appeared at a relatively low rate, as did posts in the field of space industry development.

The current research shows that space agencies do not always emphasize popular or immediate messages. These differences in signaling strategies highlight the importance of tailoring messages to specific goals and strengths of each space agency. Each space agency attempts to build a unique image and draw attention to different aspects of its activities, according to national interests, technological capabilities, and strategic goals.

The research emphasizes the importance of effective scientific communication for government space agencies, especially in the digital age where social media plays a central role in disseminating information to the general public. Government space agencies need to invest in communication strategies that highlight their unique qualities and maximize audience engagement. Signal quality and information asymmetry are key components for successfully conveying the messages of space agencies.

The research highlights the importance of developing advanced scientific communication strategies that incorporate smart use of social media. Government space agencies should continue to improve their use of digital tools to enhance public engagement, transparency, and international collaborations in space exploration. The research suggests that increased awareness of scientific issues and the development of effective communication strategies can contribute to the advancement of science and technology worldwide.

MMS: 9927060504205776