



## COVID-19 vs. DANA IN VALENCIA: Comparative Analysis of the Impact of Operation Balmis and Operation Inundaciones Valencia 2024 on the Facebook Accounts of Involved Military Units

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### ABSTRACT

*Social media are pivotal in institutional communication during crises. This study compares the impact of posts by Spanish military organisations on Facebook during Operation Balmis (COVID-19) and Operation Inundaciones Valencia 2024. The analysis examines the number of posts, likes, and comments in both periods, as well as their tone. All accounts provided extensive coverage, though some were more active. The public largely acknowledged their efforts, although initial criticism was more pronounced in Valencia. The study confirms that these accounts serve as an institutional window to showcase the work of the Armed Forces in emergencies.*

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## 1. Introduction

The Spanish Armed Forces are an instrument of the State and, as such, can and should be deployed by it in circumstances and for purposes deemed necessary or appropriate at any given time. This includes civil protection actions, encompassing scenarios such as epidemics and public health emergencies, as well as floods and assistance in disaster-stricken areas.

On 31 December 2019, Li Wenliang, an ophthalmologist at Wuhan Central Hospital, alerted the world to numerous cases of SARS, which Chinese authorities confirmed as a new coronavirus (Beijing News, 2019). Initially, the Chinese government downplayed the situation (Hegarty, 2020), but by 7 February, 722 deaths and 34,546 infections had been recorded (Triana, 2020). The WHO, concerned about the spread and severity of the disease, declared a pandemic (WHO, 2020). In Spain, the first cases emerged on 31 January in the Canary Islands and on 24 February on the mainland (Arroyo, 2020). While Italy locked down Lombardy on 8 March (Buj, 2020), Spanish hospitals were overwhelmed, the press demanded urgent government action (Girauta, 2020), and supermarkets faced shortages (M, 2020). The government declared a state of emergency on 14 March<sup>1</sup>, imposing a lockdown and restricting activities.

Ten million students shifted to online education, and transport was drastically reduced (Yuste, 2020). The economy was halted from 31 March to 9 April. Between March and May, over one million jobs were lost, with three million workers on furlough (EFE, 2020). The Ministry of Defence activated Operation Balmis, named after Francisco Javier Balmis, deploying 177,582 military personnel and conducting over 20,000 interventions (La Vanguardia, 2020). These included 3,300 disinfections of critical infrastructure, 10,976 in various facilities, 3,297 in hospitals, and 5,270 in care homes. Additionally, 112,000 kilograms of food were distributed (infodefensa, 2020), 16 field hospitals were established, and over 100 tonnes of medical supplies were transported. Four flights from Shanghai delivered three million masks and two million gloves (Coronel, 2020). The operation cost 38.5 million euros (elplural.com, 2020), and the Minister of Defence, Margarita Robles, highlighted its role in saving lives (elplural.com, 2020). The operation was led by a single command under the Chief of the Defence Staff (JEMAD), General Miguel Ángel Villarroja Vilalta, through the Operations Command (ConSalud.es, 2020). The Minister of Defence emphasized that the operation was not militaristic but focused on civil protection (Europa Press, 2020). Units from the EMAD, MOPS, UME, and Royal Guard participated, alongside units from the Army, Navy, and Air Force (EMAD, 2020). The UME, widely recognised by the public, conducted disinfection and prevention tasks. Military doctors and reservists were mobilised to bolster the health response.

Years later, on 29 October 2024, a high-altitude isolated depression (Depresión Aislada en Niveles Altos) (DANA<sup>2</sup>) triggered an extraordinary rainfall event that severely affected the eastern Spanish coast, particularly the provinces of Valencia and Albacete (AEMET, 2024). The DANA, located near the Strait of Gibraltar, generated a strong easterly flow from the Mediterranean towards the eastern coast, producing stationary precipitation systems for much of the day (Palomo Gómez, 2024). Rainfall accumulations were historic, exceeding 300 mm across a wide area of inland Valencia. In Turís, 185 mm fell in one hour and 621 mm in six hours, setting a national record (MITECO, 2024). These torrential rains caused catastrophic floods, road closures, train cancellations, and the derailment of a high-speed train (RTVE, 2024). The disaster's magnitude was devastating. In Valencia, 219 fatalities were confirmed, with a total of 227 deaths across Valencia, Castilla-La Mancha, and Andalusia (Europa Press, 2024). Numerous people were reported missing, including six in Letur (Albacete) and a lorry driver in Alcudia (Valencia) (RTVE, 2024). The DANA affected 71 municipalities in Valencia, representing 26.69% of the province's localities (Europa Press, 2024). The consequences of this extreme weather event persisted for weeks, overwhelming hospitals, damaging infrastructure, and requiring massive mobilisation of emergency resources and volunteers (López et al., 2024).

The coordinated response of the Armed Forces and emergency organisations following the DANA's impact was named Operation Inundaciones Valencia 2024 (AEMET, 2024). Given the disaster's scale, the government established a single command, in coordination with the Emergency Coordination Centre of the Valencian Government (CCE-GV), similar to Operation Balmis, to mobilise resources and ensure

<sup>1</sup> This paper focuses on the first declaration - which took place from March to June 2020 - which is where the operation under investigation was launched.

<sup>2</sup> Since 2024 the word dana has been admitted in the RAE and is no longer an acronym (Morales, 2024).

population safety (MITECO, 2024). Units from the UME (Military Emergencies Unit), alongside personnel from the Army, Navy, Royal Guard, and members of His Majesty's Household, collaborated with security forces and civil protection services to carry out rescue, evacuation, and humanitarian aid distribution (Europa Press, 2024). Their primary objective was to ensure population safety, restore critical infrastructure, and coordinate humanitarian assistance in affected areas (MITECO, 2024). Over 2,000 personnel were deployed for evacuations, rescues, debris clearance, distribution of essential supplies, and restoration of basic services. Temporary shelters were set up, water and food were distributed, and critical infrastructure such as roads and hospitals was rehabilitated. The Armed Forces also provided logistical support to emergency services and police to coordinate the response. In the initial days, criticism focused on crisis management, particularly due to a lack of foresight and delays in the initial response (López et al., 2024). Nevertheless, the military intervention was pivotal in restoring normality to infrastructure and supporting affected communities. The operation was distinguished by its speed and deployment capacity, reinforcing the Armed Forces' role in national emergencies (Morales, 2024).

In the Spanish Armed Forces, communication is highly structured, with dedicated departments in the Ministry of Defence, EMAD, and each branch. During the two operations mentioned, the EMAD and MOPS centralised the communication strategy to inform and explain the operations' progress to the public, although each unit maintained its own channels. This study analyses and compares social media, particularly Facebook, due to its high impact and broad user base. In order of prominence, the study focuses on the Facebook accounts of the Ministry of Defence (MinisterioDefensaESP), with 238,594 likes and 248,772 followers in 2020, and 276,000 followers in 2025; the EMAD (EMADmde.es), with 74,164 likes and 77,608 followers in 2020, and 84,000 likes and 98,000 followers in 2025; the UME (UMEesp), with 67,526 likes and 71,180 followers in 2020, and 77,000 likes and 98,000 followers in 2025; the Army (EjercitoTierra.Esp), with 190,981 likes and 204,996 followers in 2020, and 219,000 likes and 280,000 followers in 2025; the Navy (armadaesp), with 177,383 likes and 193,475 followers in 2020, and 194,000 likes and 272,000 followers in 2025; and the Air Force (EjercitoAire), with 102,143 likes and 113,782 followers in 2020, and 283,000 followers in 2025. The MOPS, a command under the EMAD, does not have its own social media accounts. Other units belong to one of the three branches, and as communication in each branch is centralised in a single account per branch, these were selected as the study's focus. The order of prominence reflects the historical precedence of the branches, from the oldest (Army) to the most recent (Air Force).

The study sought to understand how the Ministry of Defence managed such a complex task without generating chaotic information flow, ensuring efficient communication about the Armed Forces' actions in highly sensitive scenarios. Additionally, it aimed to analyse public reactions to this information flow, considering that, in both cases, social media users displayed a highly critical stance towards government actions.

## 2. Objectives and Methodology

The primary objective of this research is to evaluate the impact of the content on the Facebook accounts of the studied military units, comparing Operation Balmis and Operation Inundaciones Valencia 2024, with the following secondary objectives:

1. To identify and compare the number of posts uploaded by each organisation on their Facebook accounts.
2. To identify and compare the number of these posts addressing topics or content related to the operations.
3. To identify and compare the number of comments received daily on each account for posts addressing topics or content related to the operations.
4. To assess which comments are positive and which are negative, and to determine their respective counts.

The methodology involved quantitatively measuring (via manual collection) the number of posts and comments made between 14 March 2020 and 21 June 2020 (the first state of emergency during the pandemic) on the one hand, and between 29 October 2024 and 29 January 2025 on the other. Additionally, a qualitative analysis of positive and negative comments on the same posts from the same accounts was conducted using the Sprout Social software, with the keywords Balmis, coronavirus, and

Covid for the pandemic, and DANA, Valencia, and floods for 2024. The software allows for the evaluation of neutral comments, which, as they were not of interest in this study, were distributed equally, with 50% added to positive comments and 50% to negative comments. The first wave of data collection was conducted on 28 April 2020, the second on 20 May 2020, and the third on 21 June 2020, while for the DANA, data collection occurred on 29 January 2025, three months after the torrential rains. Comments were considered offensive if they included insults, profanity, or expressions of a negative nature, regardless of the recipient.

**Figure 1.** Three soldiers from the "Barcelona" Infantry Regiment No. 63 pose at the door of Poblet Monastery (Tarragona) after conducting a disinfection in May 2020.



Source: Delgado-Ureña, 2020.

Facebook, a social media platform owned by Meta, founded in 2004 by Mark Zuckerberg, was selected due to its widespread popularity across diverse demographic profiles, with 60.6% of internet users regularly accessing it, although its use has recently declined among teenagers (Ramírez, 2019). The platform has 2.5 billion monthly active users and 1.66 billion daily active users globally (Ahlgren, 2020). The most represented group is men aged 25–34, constituting 18% of total users, though its impact extends to other age and gender segments. On average, each user has 338 contacts, with around 75% visiting the platform daily and 51% accessing it multiple times a day. Every minute, 510,000 comments are generated, 293,000 statuses are updated, 4 billion likes are given, and 136,000 photos are uploaded (Osman, 2019).

This methodology builds on previous studies in this field, such as those by Fernández (2015), Samuel-Azran & Yarchi (2018) and Yarchi et al. (2017) on the use of Facebook by Israeli military forces. Similar applications have been analysed in Russia (Timberg, 2017), Taiwan (Tan & Ho, 2019), and Ecuador (López Herrera, 2018). From an institutional perspective, several studies on the use of Facebook in organisational communication were considered, including Elías et al. (2018) on the Brazilian military police, as well as Aldaz Osorio (2019), Brech et al. (2017) and Thelen y Men (2018) in the context of higher education. Additionally, its use in the promotion and external communication of museums was reviewed, based on studies by Díaz and Capriotti (2015) and Viñarás and Cabezuelo (2012).

### 3. Results

The first objective was to determine the number of posts uploaded by each organisation daily during the state of emergency and the first three months following the flood event on their Facebook accounts. Following the established order of prominence, the first organisation to report results is the Ministry of Defence. During the 100 days of the state of emergency, a total of 166 status updates were published, with the early days of the lockdown accounting for a higher number of posts, which gradually moderated. The day with the most posts was 18 March, with six updates. That same day, 18 March, was also when the Ministry uploaded the most posts about Operation Balmis, with all updates that day focusing on this topic. During the 93 days following the floods, a total of 101 posts were published, primarily in early November. The day with the most posts (seven) was 2 November.



The second organisation is the EMAD. During the 100 days of the state of emergency, they published 273 status updates in total, 138 of which addressed Operation Balmis. The day with the most posts was 27 May, with seven updates. Similarly, the days with the most content about Operation Balmis were 31 March and 13 April, each with four updates. However, this account played a minimal role during Operation Inundaciones Valencia 2024, posting content on only four days, with 15 November having the most posts (two). In this case, their content focused more on missions abroad, leaving details of the Valencia operations to other organisations' accounts.

The third organisation studied is the UME. During the 100 days of the state of emergency during the pandemic, their Facebook account published 79 status updates in total, 60 of which addressed Operation Balmis. The day with the most posts was 15 March, with five updates. The early days of the lockdown also accounted for a higher number of posts, which gradually moderated and remained low over time with a very limited number of updates. Regarding the DANA, the UME published 88 posts, 24 of which were about the floods. The UME's account is consistently cautious, posting sparingly. The highest number of posts during the pandemic was four (on 15 March 2020), and during the DANA, no day exceeded one post.

**Figure 2.** Facebook account update on 8 November 2024 that had the highest number of likes and comments of all those collected for this research.



Source: Armada, 2024.

The next organisation is the Army. During the 100 days of the state of emergency during the pandemic, they published 380 status updates on Facebook in total, 143 of which were about Operation Balmis. For the DANA, they published 189 posts, 124 of which were about operations in the affected localities. During the pandemic, the day with the most posts was 27 May, with eleven updates, and for the DANA, it was 2 and 3 November, with four posts each.

The fifth organisation is the Spanish Navy. During the 100 days of the state of emergency during the pandemic, their Facebook account published 105 status updates in total, 48 of which addressed Operation Balmis. For the DANA, they published 186 posts, 124 of which were about military actions. The days with the most posts during the pandemic were 21, 22, 26, 27, and 28 March, 1, 3, and 4 April, 1, 3, 27, and 28 May, and 6 June, each with two updates, while for the DANA, it was 6, 7, and 8 November, with six posts.

The final organisation studied is the Air Force. During the 100 days of the state of emergency during the pandemic, their Facebook account published 237 status updates in total, 96 of which addressed Operation Balmis. For the DANA, they published 183 posts, 73 of which were about progress in aiding the affected areas. The day with the most posts during the pandemic was 30 May, with nine updates, and for the DANA, it was 2 and 3 November, with eleven posts each. During Operation Balmis, of 1,240 posts, 633 updates were about the Armed Forces' actions in fulfilling their mission (51%), and nearly five years later, of 939 posts on Facebook, 439 were about Operation Inundaciones Valencia 2024 (46.75%).

**Table 1.** Number of total updates of the Facebook accounts studied during the data collection periods vs. "posts" of each of the operations studied.

	MINISDEF	EMAD	UME	ET	ARMADA	EA
Total 2020	166	273	79	380	105	237
Balmis	148	138	60	143	48	96
Total 2024	101	192	88	189	186	183
Dana	78	5	24	124	135	73

Source: Author, 2025.

The next objective was to determine the number of comments received daily on each account for posts addressing topics or content related to Operation Balmis. During the pandemic, the Ministry of Defence received nearly 40,000 comments on these updates, over 33,000 of which were positive and just over 5,500 negative. The EMAD, with nearly 6,000 comments received, had 5,751 positive and only 22 negative. A similar pattern occurred with the UME. Of nearly 3,000 comments received on their posts, 2,896 were positive and only 39 negative. Among the three branches, the situation differed. The Army received nearly 150,000 comments on their Operation Balmis posts, far more than any other, with 133,271 positive and nearly 10,000 negative. The Navy also recorded high engagement, receiving just over 22,000 comments on their mission posts, with 22,394 positive and only 110 negative. The Air Force had figures closer to those of the EMAD and UME, with 4,463 comments, of which 4,441 were positive and only 22 negative.

During the DANA, the Ministry of Defence's account received 14,065 comments in total, with 12,672 positive and 1,393 negative. The EMAD accumulated 7,498 comments, with a clear positive trend (6,464) over negative (1,034). The UME, a key player in emergencies, received 4,220 comments, with 3,872 positive and 348 negative. The Army, which had the highest number of comments during Operation Balmis, received 6,327 comments this time, with 5,859 positive and 468 negative. The Navy amassed 6,677 comments, with positive comments (6,126) outweighing negative ones (551). The Air Force generated 6,293 comments, with 5,721 positive and 572 negative.

**Table 2.** Number of comments extracted from the studied accounts during the selected time periods for the two operations investigated, detailing the number of positive and negative comments.

	Total comments Balmis		Total comments DANA	
MINISDEF	38.835		14.065	
	Positive	Negative	Positive	Negative
	33.248	5.587	12.672	1.393
EMAD	5.773		7.498	
	Positive	Negative	Positive	Negative
	5.751	22	6.464	1.034
UME	2.935		4.220	
	Positive	Negative	Positive	Negative
	2.896	39	3.872	348
ET	142.487		6.327	
	Positive	Negative	Positive	Negative
	133.271	9.216	5.859	468
ARMADA	22.504		6.677	
	Positive	Negative	Positive	Negative
	22.394	110	6.126	551
EA	4.463		6.293	
	Positive	Negative	Positive	Negative
	4.441	22	5.721	572

Source: The author, 2025.

#### 4. Discussion and Conclusions

This research aimed to evaluate and compare the impact of Operation Balmis during the COVID-19 pandemic and Operation Inundaciones (Floods) Valencia 2024 on the Facebook accounts of the involved military units. The first objective was to identify and compare the number of posts uploaded by each organisation on their Facebook accounts during both operations. The results reveal significant differences both between the operations and among the various military units. During Operation Balmis, the Ministry of Defence published 166 status updates over 100 days, with a peak of 6 posts on 18 March. In contrast, during Operation Inundaciones Valencia 2024, 101 posts were published over 93 days, with a maximum of 7 posts on 2 November. This indicates a slight decrease in posting frequency, possibly due to improved planning and coordination of communication based on prior experience. The EMAD exhibited a drastic shift in its communication strategy between the two operations. During Operation Balmis, it published 273 status updates, with a peak of 7 on 27 May. However, during Operation Inundaciones Valencia 2024, its activity significantly decreased, posting content on only four days, with a maximum of 2 posts on 15 November. This reduction suggests a shift in communication strategy, possibly delegating information about national operations to other units. The UME maintained a consistent communication strategy across both operations. During Operation Balmis, it published 79 status updates, with a maximum of 5 on 15 March. During Operation Inundaciones Valencia 2024, it slightly increased its activity with 88 posts, maintaining a cautious approach and never exceeding one post per day related to the operation. The Army showed a reduction in total posting volume but an increase in operation-related content. During Operation Balmis, it published 380 status updates, 143 of which were related to the operation. During Operation Inundaciones Valencia 2024, it reduced its total to 189 posts but increased operation-related posts to 124. This suggests a more focused approach to communicating operational activities. The Navy showed a significant increase in communication activity. During Operation Balmis, it published 105 status updates, 48 of which were related to the operation. During Operation Inundaciones Valencia 2024, it increased to 186 posts, with 124 related to the operation. This increase indicates greater involvement and visibility of the Navy in national emergency operations. The Air Force maintained a similar level of activity in both operations. During Operation Balmis, it published 237 status updates, 96 of which were related to the operation. During Operation Inundaciones Valencia 2024, it published 183 posts, 73 of which were related to the operation, suggesting a consistent and balanced communication strategy.

The second objective was to compare the number of posts specifically addressing topics related to each operation. The results show a slight decrease in the percentage of content dedicated to the ongoing operation but a more balanced communication approach. During Operation Balmis, of 1,240 posts, 633 (51%) were directly related to the operation. During Operation Inundaciones Valencia 2024, of 939 posts, 439 (46.75%) focused on the operation. This slight decrease may indicate a more balanced communication approach, keeping the public informed about the ongoing operation while continuing regular communication activities.

The Ministry of Defence maintained a high percentage of operation-related content in both cases. In contrast, the EMAD showed a significant decrease in operation-related content during the DANA, focusing more on foreign missions. The UME maintained a consistent focus across both operations, with most of its content centred on emergency activities. The Army increased the percentage of operation-related content during the DANA, reflecting greater involvement in national emergency operations. The Navy also saw a significant increase in operation-related content during the DANA, indicating greater participation in national emergency operations. Finally, the Air Force maintained a similar percentage of operation-related content in both cases.

The third objective focused on comparing the number of comments received on posts related to each operation. The results show significant differences in both volume and nature of comments. A notable decrease in the total number of comments was observed during Operation Inundaciones Valencia 2024 compared to Operation Balmis. This could be attributed to several factors: the novelty and global impact of the COVID-19 pandemic generated greater public interest and engagement during Operation Balmis. Additionally, the experience gained in communication management during this operation may have enabled a more focused and efficient strategy during Operation Inundaciones Valencia 2024. Furthermore, the localized nature of the DANA, compared to the nationwide impact of the pandemic, may have generated less general public interest.

The fourth objective focused on qualitatively evaluating the positive and negative comments received during both operations. During Operation Balmis, the majority of comments were positive, reflecting strong public support for the Armed Forces' actions in combating the pandemic. Negative comments, though minimal, focused on criticisms of the general management of the pandemic and questions about the necessity of involving the Armed Forces in a health crisis. During Operation Inundaciones Valencia 2024, while most comments remained positive, there was a slight increase in criticism, focusing on the initial crisis management and resource allocation.

The evolution of the communication strategy shows a more balanced and coordinated approach during Operation Inundaciones Valencia 2024, possibly resulting from lessons learned during Operation Balmis. The Armed Forces demonstrated remarkable adaptability and flexibility, adjusting to the different natures of the crises. Both operations further reinforced the image of the Armed Forces as a vital resource in national emergencies. The increase in constructive critical comments indicates greater public awareness of the Armed Forces' role in Spanish society, reflecting a maturity in public dialogue. Finally, the differences in communication activity among the various military units highlight the need for tailored strategies for each unit.

Lessons learned and recommendations for future crises, derived from this study's results, underscore the importance of effective institutional communication. It is recommended to implement a more uniform communication strategy across different organisations, ensuring message consistency. It is also crucial to increase the frequency and consistency of social media posts from the onset of a crisis to keep the public informed. Additionally, the continuous use of social media analytics tools is suggested to evaluate public responses and adjust communication in real time. Finally, fostering interaction with the public through responses and clarifications on social media is recommended to reduce misinformation.

The Spanish Armed Forces have proven to be a fundamental pillar in responding to national crises, both in health emergencies and natural disasters. The comparison between Operation Balmis and Operation Inundaciones Valencia 2024 highlights the importance of effective institutional communication in managing public perception and strengthening trust in institutions. Despite the challenges and differences between the two operations, the quantitative and qualitative analysis of social media confirms that the presence and information disseminated by the Armed Forces have been key to consolidating their role in civil protection and emergency response in Spain.

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