



Research article

Content Analysis of the Agricultural Extension Channel in Iraq on the YouTube Platform of the Directorate of Agricultural Extension and Training

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ABSTRACT

This research examines the content of the Agricultural Extension channel on YouTube in Iraq, which is affiliated with the Department of Agricultural Extension and Training at the Ministry of Agriculture, covering the period from 2012 to 2025. The researcher adopted a descriptive approach and content analysis methodology to achieve the research's objectives. The research tool was structured around three domains: extension content, the institutional digital domain, and a synthetic domain that combines the two. A stratified purposive sample of 16% was selected from the research population of 400 videos, resulting in a sample of 64 videos, distributed evenly across four-time phases. The data were analyzed using frequencies, percentages, arithmetic means, and weighted time proportions. The research results showed an increase in the percentage of content classified as extension classification from (18.75%) in the first phase to (62.50%) in the third phase, and a gradual improvement in the quality of digital production from 28.75% to (61.25%) between the first and fourth phases. As for the institutional and digital readiness of the channel, its nature differs from the rest of the results, as it was not monitored across the four phases like the others, but was measured only once on the date the research was conducted as a snapshot of the channel's current status at the time of monitoring; the result showed the absence of all established indicators in this area. This indicates that the development of content and production quality has not been matched by a corresponding development in the channel's institutional and digital aspects, making this particular aspect the first priority for improvement. Therefore, the research recommends entrusting the channel's management to a team specializing in digital media and working to activate its institutional and digital readiness indicators, thereby enhancing its ability to fulfill its extension role and take full advantage of the digital platform's potential.

1. Introduction

Agricultural extension is an organizational and technical tool adopted by governments to enhance the efficiency of the agricultural sector and improve its productive output (Hassun & Al-Mashhadani, 2025), as it acts as an intermediary in transferring scientific research findings and agricultural

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technologies from universities and research centers to farmers, and in transforming theoretical knowledge into practical applications in the field (Wijeratne & De Silva, 2024). The effectiveness of this role depends on the extension system's ability to simplify knowledge and adapt it to the farmers' context (Hlatshwayo & Worth, 2019), thereby improving their response to modern practices (Belonwu & Moseri, 2026).

Agricultural extension is understood as a non-formal educational process that brings about changes in farmers' knowledge, skills, and behavior, which in turn affect their productive efficiency and living standards (Massimi et al., 2021). This is achieved through individual, group, and mass communication methods and means (Raghunathan et al., 2019; Mohammad & Sakina, 2023). Mass communication methods are the most widespread because they transcend spatial and temporal constraints (Landini & Gallardo-López, 2022; Chivers et al., 2022). They have traditionally been associated with radio, television, and print publications (Das et al., 2022), before digital development reshaped mass communication patterns and expanded the potential for disseminating agricultural content online (Ghosh et al., 2021), foremost among which is YouTube, which enhances the retention of agricultural information compared to traditional media (Chivers et al., 2022). However, capitalizing on these opportunities requires adherence to digital content management standards (quality of production, regularity of publication, consistency of visual and audio identity) that govern the platform's algorithms and determine content reach. Studies have shown that channels that adhere to these standards achieve higher engagement and reach (Möller et al., 2018; Bärthel, 2018); that is, content quality alone is not sufficient without technical compliance with these standards.

In line with this trend (Steinke et al., 2020), the Department of Agricultural Extension and Training in Iraq established the "Agricultural Extension in Iraq" channel on YouTube, as the only official digital extension tool in Iraq. However, from its establishment in 2012 through March 16, 2026, it produced only 407 videos (an average of ~29 videos per year) a relatively low rate that is not commensurate with the nature of an extension channel that is supposed to cover service operations and keep pace with agricultural seasons and emergency crises. Viewership figures also varied significantly: some of the early videos garnered between 54,000 and 116,000 views, while a considerable number of them have not exceeded 200 views even more than eight years after their release. This disparity may be due to a combination of factors, including adherence to publishing standards (regularity, content type, and presentation style), and the fact that a large portion of the material was originally produced for broadcast on Iraqi satellite channels and then re-uploaded to YouTube without adaptation. The Department of Agricultural Extension and Training produces most of its videos including television programs under contract with satellite channels (most notably Al-Iraqiya) in exchange for broadcast fees, and the Higher Committee for the Agricultural Initiative covered most of these costs (including actors' fees and broadcast fees) until 2017. With the cessation of this support, the ability to produce high-cost content particularly dramatized scenes diminished, coinciding with the financial crisis faced by the Iraqi government. and work continued with limited resources until the Department was recently allocated funds as part of agricultural department projects, allowing for a notable return of dramatized scenes (interview with the director of the Department's television programming division, 2026). However, this financial challenge explains only the actual production costs (such as contracts with satellite channels and actors' salaries) and does not, on its own, account for the channel's level of digital readiness; since administrative indicators such as the channel's description, official links, and the organization of playlists incur negligible costs; rather, they relate to the channel's management mechanisms and its focus on digital readiness. This confirms that the channel's limited presence is not

linked solely to production and funding, but rather to the interplay between the nature of the content produced and the way it is presented and managed on the platform.

Despite this continuous output since 2012, the channel has not, as far as the available literature shows, been the subject of any systematic scientific research of its communicative structure, its content characteristics, or its digital performance. Little is known about its production and publishing patterns over time. Its content has never been classified within a scientific framework, nor has its adherence to professional digital-content standards been assessed against the platform's own indicators. Content analysis is well suited to closing this gap: it can track and document the channel's trajectory and uncover the nature of its extension messages, their forms, and how far they comply with digital publishing standards (Riffe et al., 2024). Earlier Iraqi studies on this same institutional body confirm the gap rather than fill it: they were confined to traditional media, television programs (Bakr, 1986) and radio (Al-Qaisi, 1995), or examined how these media affected the transfer of agricultural knowledge (Naji & Tawfiq, 2006), domains that differ fundamentally from today's interactive digital environment. No study has yet treated the channel as a model of digital agricultural extension in Iraq within a comprehensive, systematic content analysis of its communicative structure, production quality, and institutional identity.

The present study addresses this gap by analyzing the content of the Agricultural Extension Channel in Iraq on YouTube over the period 2012–2025, characterizing its structural trajectory across four-time phases within three domains: extension content, institutional–digital, and composite–integrative. The aim is to provide a documented scientific basis for understanding the channel's performance within Iraq's digital agricultural-extension environment, and to give decision-makers a scientific diagnosis they can use to correct its course and strengthen its extension impact. This leads to the research question: what is the extension and digital performance of the channel?

2. Research Objectives

This research aims to achieve a primary objective: to analyze the Agricultural Extension Channel in Iraq on YouTube, operated by the Department of Agricultural Extension and Training, through

1. analyzing the extension content of the Agricultural Extension Channel in Iraq on YouTube for the period from 2012–2025.
2. analyzing the institutional digital performance of the Agricultural Extension Channel in Iraq on YouTube for the period 2012–2025;
3. To track the channel's overall developmental trajectory from 2012–2025.

3. Scope of the Research

This research is limited to analyzing the channel's extension content in terms of its classification, formats, and topics, and to measuring its level of compliance with digital and institutional standards related to publishing on YouTube; it does not address measuring the level of audience engagement or explaining its causes. Accordingly, view counts and variations therein are mentioned in the context of the research problem as preliminary observations that contributed to defining the problem; they are not used in this research as a direct indicator of audience engagement or the channel's effectiveness, as assessing this requires a separate analysis of metrics such as views, likes, comments, and shares. As

for the channel's institutional and digital readiness indicators (Table 7), were measured on the date the research was conducted (March 16, 2026) that is, after the time period covered by the analysis (2012–2025) had ended as a snapshot of the channel's current status at the time of monitoring, rather than as part of the historical analysis across its four phases.

4. Research Hypotheses

1. The relative distributions of the extension content indicators (overall classification, presenter categories, presentation formats, and topic dominance) for the Agricultural Extension Channel in Iraq vary across the four-time phases.
2. The extent of change in the channel's digital-performance indicators across the four-time phases varies depending on the nature of the indicator, such that the change in quality control standards for production and broadcasting is expected to be greater than the change in the consistency of visual and audio identity.

5. Significance of Research

This research is, to date, the first to analyze the content of the Agricultural Extension Channel in Iraq on YouTube, its classification, forms, and topics, together with how far the channel complies with the digital and institutional standards adopted on the platform. It also gives decision-makers a documented scientific diagnosis they can draw on to improve the channel's content and strengthen its performance.

6- Materials and Methods

This research employed a descriptive research approach using content analysis because it is best suited to achieving its objectives, given its ability to analyze communicative content systematically and objectively, particularly audiovisual content (Al-Mashhadani, 2019), which constitutes the predominant format on video-sharing platforms. This method allows for a structured quantitative description of the content of media materials and reveals their thematic patterns, production characteristics, and the level of consistency in their institutional identity, thereby ensuring that the results are verifiable and replicable.

6-1- Research Population and Sample

The research population consisted of all videos published on the Agricultural Extension channel in Iraq on YouTube from its establishment in 2012 through March 16, 2026, totaling 407 videos. The analysis was limited to videos published during the period 2012–2025, excluding the 7 videos from 2026 because the calendar year and its four agricultural seasons were not yet complete at the time of the research. This ensured consistency in the temporal comparison and balance in the analysis, resulting in a research population of 400 videos.

A balanced stratified purposive sample representing 16% of the research population was selected, resulting in a sample of 64 videos, divided equally across four-time phases, with 16 videos per period.

In selecting the sample, care was taken to ensure balanced representation of the four agricultural seasons (winter, spring, summer, and fall) within each phase, to avoid sample bias toward one season over another. This number was chosen in light of the nature of the research population and the variation in the number of videos posted across years and seasons; it was not possible to increase the number of videos selected from certain seasons or years without disrupting the balance between the temporal and seasonal strata. Therefore, the research adopted a standardized number of videos to ensure a fair comparison across phases and seasons, minimize the impact of variations in posting frequency between different periods, and ensure the availability of complete metadata for each video, as well as the ability to accurately analyze its content over time without the need for estimates. The channel's timeframe was divided into four phases: the first (2012–mid-2015), the second (mid-2015–2018), the third (2019–mid-2022), and the fourth (mid-2022–2025).

6-2-Unit of Analysis

The research employed a content analysis questionnaire developed based on three complementary sources: scientific literature related to agricultural extension and digital media; the opinions of a number of experts specializing in these two fields; and YouTube's officially adopted publishing guidelines and performance rules. The tool consisted of three domains: The first domain (extension domain): This includes four axes: the general classification of the channel's content; the categories of extension information providers; the formats in which the information is presented; and the predominance of agricultural topic.

The second domain (the technical-digital domain) comprises three axes: quality control standards in digital production and distribution; the channel's institutional and digital readiness; and the consistency of its content's visual and audio identity. The third domain: This is the composite-integrative domain that tracks the channel's overall developmental trajectory across its four chronological phases, serving as a synthetic interpretation of the combined results of the seven domains.

6-3-Content Analysis Tool

The analysis tool was structured around three domains: An extension content domain concerned with the content of the extension message itself (Axes 1, 2, 3, 4); a digital-institutional domain concerned with the quality of production and the channel's institutional presence (Axes 5, 6, 7); and a third, composite-integrative domain, as illustrated in Table (1):

Table 1. Distribution of the Channel Content Analysis Axes by Domain, Category, and Unit of measurement

Domain	Axis	Categories	Unit of measurement
Extension content domain	General classification of channel content	Extension, News, Miscellaneous	Weighted minute, based on the temporal-

Domain	Axis	Categories	Unit of measurement
			dominance criterion (50% or more)
	Categories of extension-information presenters	Agricultural official, agricultural expert/researcher, program host, actors, farmer	Aggregated weighted temporal ratio for each category across the phase's videos
	Forms of presenting extension information	TV program, TV investigative report, documentary film, short extension segments	Percentage of number of videos
	Dominance of agricultural topic	Animal, poultry, and fish production and veterinary care; plant production and horticulture; plant protection and pest control; agricultural technologies and inputs; institutional and developmental aspects; marketing and processing industries; general/miscellaneous	Aggregated weighted temporal ratio for each category across the phase's videos
Digital-institutional domain	Quality-control standards in digital production and publishing	Ten technical indicators (title phrasing, thumbnail, description, chapter division, audio quality, call to engagement...)	Binary coding (present=1/absent=0) and percentage of fulfillment
	Institutional and digital readiness of the channel	Twelve institutional indicators (cover image, logo, channel description, official links, playlists...)	Binary coding at channel level
	Consistency of visual and audio identity	Six indicators (fixed logo, speaker identification, intro/outro music...)	Binary coding at channel level
Composite-integrative domain	Tracking and documenting the channel's structural trajectory	Aggregation of the dominant value from each of the seven preceding axes, per phase	Relative, synthesized reading requiring no independent measurement

Domain	Axis	Categories	Unit of measurement
	across its time phases		

6-4-Validity and Reliability of the Analysis Tool

The validity of the analysis tool was verified by presenting it after it was developed based on the sources cited in the analysis section to a group of experts specializing in agricultural extension and digital media, who confirmed that its categories and indicators were appropriate for measuring what they were intended to measure and that they complied with YouTube's publishing guidelines (YouTube Help, n.d.). The modifications they suggested were incorporated prior to final implementation. Coding was based on predefined procedural instructions, which included a definition of each category within the seven axes (Table 1) and a rule for determining the dominant category when it exceeded 50% of the time or frequency within the unit of analysis, thereby ensuring consistency in coding decisions across the entire sample.

As for the instrument's reliability, it was verified using the test-retest method, in which the researcher, as the sole coder for the entire sample, recoded a subsample drawn from the research sample itself not an additional, independent sample (intra-rater reliability), in accordance with the methodological practice adopted in content analysis, which measures reliability on a subsample of the original data itself (Krippendorff, 2004). This subsample (20% of the total sample) was selected randomly to avoid any potential bias in the selection of the reliability sample (Lombard et al., 2002), with an interval of two weeks. Cohen's Kappa was used to measure the degree of consistency between the two administrations; the raw agreement rate between the two administrations was 87.2% across all axes. Cohen's Kappa, adjusted for the probability of chance agreement, was calculated for each of the six axes based on repeated ratings of each individual video; its values ranged from 0.56 to 0.90, with an overall mean of 0.73, which fall within the "moderate to near-perfect agreement" category according to the criteria of Landis & Koch (1977) and indicate an acceptable level of reliability for the instrument. Cohen's kappa was used because the basic coding unit was a categorical decision (determining the dominant category based on a 50% cutoff), not an independent quantitative estimate by the coders; this makes Cohen's kappa the methodologically appropriate measure (Krippendorff, 2004), unlike coding situations that require a comparison of independent continuous numerical estimates, where the Interclass Correlation Coefficient (ICC) is more appropriate. As for the institutional and digital readiness dimension, it is assessed once at the channel level as a whole, as a fixed characteristic that is not observed repeatedly for each individual video; therefore, it was not subjected to any testing, whether through recoding or any other method. The nature of this single point-in-time measurement does not allow us to conclude whether these indicators changed or remained the same during the four phases preceding the monitoring date.

7. Statistical Methods

The research data were analyzed using the following statistical methods: Frequencies and percentages to describe the distribution of indicators and axes across the sample and the four time phases; the simple arithmetic mean to calculate the overall percentage for the axes of quality, institutional readiness, and identity consistency, by dividing the sum of the achievement percentages of the sub-indicators comprising the dimension by their number; and the weighted temporal ratio formula to calculate the axes of “extension providers” and “Dominance of agricultural topic,” according to the equation: $\text{Percentage \%} = (\text{Total minutes of the category within the phase} \div \text{Total minutes of videos in the phase}) \times 100$, since the content of a single video may be distributed across more than one category in varying time proportions; and the time dominance criterion for calculating the general classification axis, whereby a video is classified as extension if a single content category accounts for (50%) or more of its total duration, and the phase percentage is then calculated as: $(\text{number of videos classified within the category} \div \text{total number of videos in the phase}) \times 100$, because the research question here targets the general nature of the video itself, not the distribution of its internal content.

8. Results and Discussion

First Domain: Extension Content

Axis One: Classification of Channel Content Across the Four-Time Phases

Table (2) shows the classification of the channel’s content into three categories (extension, news, and miscellaneous) based on the criterion of temporal dominance, such that a video is classified as extension or news if one category accounts for more than 50% of its duration, and is classified as miscellaneous otherwise, with the aim of determining the predominant nature of the video and assessing its consistency with the channel’s extension function.

Table 2. Relative Distribution of Channel Content Classification Across the Four-Time Phases

Category	First Phase%	Second Phase%	Third Phase%	Fourth Phase %	Average
Extension	18.75	18.75	62.50	25.00	31.25
News	6.25	6.25	18.75	6.25	9.375
Miscellaneous	75.00	75.00	18.75	68.75	59.375

N = 16 videos per phase (total = 64). Some values were left unrounded so the total would not exceed 100.

The results in Table (2) show that the miscellaneous content category recorded an average of approximately (60%), which is the highest percentage compared to the other two categories, indicating a high proportion of videos that combine more than one topic in a single video. This pattern does not align well with YouTube’s content publishing requirements, as focusing on a specific topic helps clarify a video’s categorization and directs it to the audience most interested in it, while also helping to retain viewer engagement (YouTube Help, n.d.). The high proportion of diverse content may be linked to the nature of these videos’ production; it appears that some were originally produced as television programs featuring multiple segments and topics within a single episode and were then reposted on YouTube without being restructured to suit the characteristics of digital publishing. This is consistent with recent studies on digital audience behavior, which indicate that users tend to prefer

specialized content that addresses a specific topic and caters to a clear interest, rather than content covering multiple topics (Gangwani & Thakur, 2025).

Similarly, extension content reached its highest percentage in Phase 3 (62.50%) compared to the other phases, which may be linked to the circumstances of the COVID-19 pandemic during the years 2020–2021, and the accompanying restrictions on movement, gatherings, and the implementation of field extension activities. This may have led to increased reliance on the channel to provide extension information remotely, as it was an available means of maintaining contact with farmers amid reduced opportunities for direct communication. This explanation remains a time-bound possibility, as content analysis data alone does not allow us to prove that the pandemic was the direct cause of the increase in the proportion of extension content.

As for news content, it maintained limited proportions ranging from 6.25% to 18.75% across the time phases, indicating that news and news coverage constituted a limited aspect of the channel's content compared extension and miscellaneous material. The low presence of this type of content may be linked to the channel's continued focus on its educational function, with news content used only to a limited extent to cover agricultural activities and events, without becoming the dominant pattern in the published content.

Axis Two: Categories of Extension-Information Presenters

Table (3) shows the distribution of weighted time shares by the dominant character category in each video clip of the sample, across five categories: agricultural official, agricultural expert or researcher, program host, actors (in dramatized awareness scenes), and farmer; with the aim of identifying the source of the extension information upon which the credibility of the extension message is based at each phase.

Table 3. Relative Distribution of Extension-Information Presenter Categories

Category	First Phase	Second Phase	Third Phase	Fourth Phase	Average
Agricultural official	40.70	25.20	39.20	13.20	29.575
Agricultural Expert/researcher	19.10	16.20	48.40	14.50	24.55
Program host	17.30	25.30	9.20	21.20	18.25
Actors	12.00	17.70	0.70	24.90	13.825
Farmer	10.90	15.60	2.50	26.20	13.80

N = 16 videos per phase (total N = 64). Some values were left unrounded so the total would not exceed 100.

Table (3) shows a clear fluctuation in the values for the agricultural official: they fell from (40.70%) in the first phase to (25.20%) in the second phase, then rose sharply to 39.20% in the third phase, and subsequently fell to their lowest level (13.2%) in the fourth phase, in contrast to an almost opposite trend in the farmers' share, which rose from (10.90%) to (15.60%), then fell sharply to (2.50%), and finally peaked in the fourth phase at (26.20%). The general trend toward a decline in reliance on official sources alone in favor of sources closer to farmers is considered a positive indicator by modern extension communication standards; empirical evidence shows that farmers are more convinced by extension messages when they are delivered by farmers who share their identity or similar farming conditions, compared to an official source lacking such affinity (BenYishay & Mobarak, 2019). This

suggests that extension messages are gradually becoming more effective in reaching their target audience.

It is also noted in the third phase that there was a clear increase in the share of both agricultural officials (39.20%) and agricultural experts or researchers (48.40)—the highest among all phases—compared to a sharp decline in the appearance of farmers (2.50%) and representative scenes (0.70%). This may be linked to the circumstances of the COVID-19 pandemic (2020–2021), which necessitated a reduction in field activities and restrictions on movement and gatherings, which in turn affected the nature of extension media production. Production was thus limited to content featuring officials and experts in enclosed spaces (offices or laboratories) without the need for on-site filming with farmers or actors.

This interpretation may be supported by the resurgence of farmer representation and reenactments in Phase 4 (24.90%) following the easing of those restrictions, which may confirm that the change in Phase 3 was temporary and linked to exceptional circumstances rather than a stable strategic trend.

Axis Three: Forms of Presenting Extension Information

Table (4) shows the relative distribution of the sample videos according to their general production format, divided into four categories: television program (the usual recurring format), television feature, documentary film, and short standalone extension segments; the aim is to identify the format chosen by the channel to present its extension message to the audience.

Table 4. Relative Distribution of the Forms of Presenting Extension Information

Category	First Phase	Second Phase	Third Phase	Fourth Phase	Average
TV program	87.50	93.75	93.75	87.50	90.63
TV investigative report	6.25	0.00	0.00	0.00	1.56
Documentary film	6.25	0.00	0.00	0.00	1.56
Short extension segments	0.00	6.25	6.25	12.50	6.25

N = 16 videos per phase (total N = 64).

The results in Table (4) show that the TV program category received a very high percentage ranging from 87.5% to 93.75% across all phases, which is considered a negative indicator according to the digital platform's publishing standards; This format, with its relative length and multiple segments within a single episode, contradicts YouTube's official recommendation to avoid filler and artificially extending content, and to focus instead on providing concise, genuine value that maintains viewer engagement throughout the video (YouTube Help, n.d.). This consistency can be explained by the fact that the material was originally produced for television broadcast and then reposted as-is without adaptation to meet the requirements of digital publishing, which may limit its reach despite continued production. This is supported by recent research confirming that simply reposting television content on YouTube is no longer sufficient to achieve reach, and that better performance is linked to the development of content specifically designed to meet the platform's publishing standards (George, 2025).

Conversely, the emergence of short extension segments the format that most closely aligns with modern digital publishing standards only beginning in the second phase and at modest rates not exceeding (12.5%) at most, constitutes a slight positive indicator of a belated awareness of the platform's requirements, but it remains insufficient to bring about a genuine shift in the dominant overall format.

Axis Four: Dominance of Agricultural Topic

Table (5) shows the distribution of weighted minutes according to the dominant agricultural theme in each segment of the sample videos, within seven comprehensive thematic categories, with the aim of identifying the priorities of the extension content addressed by the channel across its four chronological phases.

Table 5. Relative Distribution of Dominance of agricultural topic

Category	First Phase	Second Phase	Third Phase	Fourth Phase	Average
Animal, poultry, and fish production and veterinary care	36.60	19.00	34.30	28.30	29.55
Plant production and horticulture	27.80	29.20	28.80	26.80	28.15
Plant protection and pest control	12.50	7.90	7.40	13.10	10.225
Agricultural technologies and inputs	11.40	13.00	12.20	10.60	11.80
Institutional and developmental aspects	8.10	16.00	2.50	4.90	7.875
Marketing and processing industries	1.60	0.00	2.50	0.80	1.225
General/Miscellaneous	2.00	14.90	12.30	15.50	11.175

N = 16 videos per phase (total N = 64). Some values were left unrounded so the total would not exceed 100.

The results in Table (5) show that the topics of animal production and plant production maintained their leading positions across all four phases, with averages of (29.55%) and (28.15%), respectively figures that are quite close. This may be due to the fact that these topics are among the priorities of the extension content, This consistency can be viewed from two perspectives: on the one hand, it indicates the channel's continued focus on its core advisory function related to production; on the other hand, however, it reveals a persistent weakness in the topics of marketing and processing industries, which remained very limited (1.225%), indicating a lack of coverage of the post-production phases of the agricultural process.

There is also a clear decline in coverage of institutional and development aspects during the third phase (2.50%), compared to (16.00%) in the previous phase. This decline can be attributed, possibly but not definitively, to the exceptional circumstances imposed by the COVID-19 pandemic (2020–2021); as this type of content often relies on various on-site extension activities such as seminars and exhibitions activities whose very nature conflicted with the requirements for social distancing and the prohibition of gatherings during that period, which may have led to the production of videos in a closed environment relying on officials and experts inside offices or laboratories. This may explain the simultaneous rise in their shares in Table (3) during the same phase, contrasted by a sharp decline in the appearance of farms and reenactments that require on-site filming. The coincidence of these two independent trends reinforces the likelihood that the change during this specific phase resulted from exceptional, emergency production circumstances, rather than a permanent strategic

shift in the channel's orientation. This is supported by data from the fourth phase, where the renewed increase in the representation of farms (24.90%) following the lifting of those restrictions lends credence to this temporary explanation.

Second Domain: Digital-Institutional

Axis One: Quality-Control Standards in Digital Production and Publishing

Table (6) presents the results of an analysis of ten technical indicators related to the quality of digital production and distribution, showing the compliance rate for each individual indicator across the four phases, as well as an overall rate representing the total level of compliance with the platform's standards in each phase.

Table 6. Relative Distribution of Quality-Control Standards in Digital Production and Publishing

No.	Indicator	First Phase%	Second Phase%	Third Phase%	Fourth Phase%	Average%
1	Proper phrasing of the video title	0.00	6.25	18.75	18.75	10.94
2	Video title matches the content	81.25	93.75	100	100	93.75
3	Custom-designed thumbnail for the video	0.00	0.00	0.00	0.00	0.00
4	Presence of a video description	93.75	100	100	100	98.44
5	Description reflects the scientific and extension content	0.00	0.00	100	100	50.00
6	Long videos divided into chapters	0.00	0.00	0.00	0.00	0.00
7	Video free of technical audio dropouts	81.25	93.75	100	100	93.75
8	Video free of inconsistent audio levels	25.00	43.75	75.00	93.75	59.38
9	Speaker's audio is clear and free of interference	6.25	6.25	100	100	53.13
10	Call-to-action inviting viewer engagement (CTA)	0.00	0.00	0.00	0.00	0.00
Overall average for quality standards		28.75	34.38	59.38	61.25	45.94

N = 16 videos per phase; ten technical indicators (binary coding).

The results in Table (6) show a clear and steady upward trend in digital quality standards across the four phases, from (28.75%) to (61.25%), which is the most evident and consistent improvement among all other research domains. However, as revealed by the data from its constituent sub-indicators, this improvement is almost entirely concentrated in purely technical aspects (sound quality and clarity), while it remained completely and consistently absent in the elements that determine the discoverability of content and audience interaction with it (well-designed thumbnails, chapter divisions, and calls for audience interaction), all of which recorded a complete absence (0.00%) throughout all four phases without exception. This discrepancy reveals that the improvement was not a genuine shift toward an authentic digital production model based on discovery and interaction, but rather a partial technical improvement limited to what the advisory body was originally qualified to handle based on its traditional radio and television experience.

Axis Two: Institutional and Digital Readiness Indicators of the Channel

Table (7) presents the results of an analysis of twelve institutional and digital indicators at the channel level as a whole (rather than for individual videos), such as the cover image, logo, channel description, official links, playlists, activation of the community tab, and responses to followers' comments. These indicators were monitored on the date of the research (March 16, 2026) as a current characteristic of the channel reflecting its structural status at the time of monitoring, not as a measurement distributed across the four-time phases like the other axes.

Table 7. Relative Distribution of the Channel's Institutional and Digital Readiness Indicators

NO.	Indicator	Verification Score
1	Professional cover image (Channel Art/Banner) reflecting the Directorate's institutional identity	0.00
2	Directorate of Agricultural Extension and Training logo fixed in the channel banner	0.00
3	Presence of a channel-specific logo visually consistent with the Directorate's logo	0.00
4	Channel description (About) that identifies its agricultural extension identity	0.00
5	Presence of official links below the channel description (official website, Facebook, other platforms)	0.00
6	Channel videos organized into playlists	0.00
7	Activation of the Community tab for engaging with followers	0.00
8	Introductory trailer video for new subscribers	0.00
9	Display of latest videos for existing subscribers	0.00
10	Suggestion of other extension videos through end screens	0.00
11	Use of Shorts to deliver quick information	0.00
12	Channel management responding to farmers' and followers' comments and inquiries	0.00
Overall average for institutional and digital readiness indicators		0.00

N = twelve indicators (binary coding); a cross-sectional assessment dated 16 March 2026 (see explanation above).

Table (7) shows a complete absence (zero) of all twelve indicators in the channel's current state at the time of monitoring, without a single exception. This absence is negative by global standards of institutional digital presence; collectively, these indicators represent the first impression any new visitor to the channel encounters before watching any video, and their complete absence in the current assessment means that the channel, as of the monitoring date, lacks an institutional interface that defines its identity and earns it the trust necessary to build a stable subscriber base.

This absence takes on additional significance at the present moment when compared to the results of the digital production quality category, which showed actual improvement across all four phases (Table 6); While technical production data show a gradual, chronologically documented evolution, no similar data are available to document whether indicators of institutional readiness have changed over time, since their measurement was limited to a single point in time. Nevertheless, the complete absence of these indicators in their current state even though most of them (such as professional cover design or writing a descriptive synopsis) do not require a budget or complex technical expertise so much as a simple administrative decision at the time of evaluation suggests that the root of the current

shortcomings is more likely planning and administrative in nature than technical or financial without this implying a historical judgment on the channel's trajectory over the past fourteen years, but rather a description of its current state as observed.

Axis Three: Consistency of Visual and Audio Identity Indicators

Table (8) presents the results of an analysis of six visual and auditory indicators that typically contribute to the formation of a channel's unified digital identity. These indicators were monitored for each video in the sample (16 videos per phase) to track their evolution across the four-time phases.

Table 8. Relative Distribution of Visual and Audio Identity Consistency Indicators

NO.	Indicator	First %	Second %	Third %	Fourth %	Average %
1	The channel logo must appear permanently as a watermark in the lower corner	100	100	100	100	100
2	A consistent, standardized visual design for identifying speakers (Lower Thirds)	0.00	0.00	0.00	0.00	0.00
3	Includes music or a special opening theme song for the program	75.00	87.50	87.50	87.50	84.38
4	The program features its own closing theme music or song	0.00	0.00	0.00	0.00	0.00
5	The presence of a soundtrack specific to the channel within the video	0.00	0.00	0.00	0.00	0.00
6	Adopt a unified color and visual style (theme) that reflects the corporate identity	0.00	0.00	0.00	0.00	0.00
Overall Identity Consistency Score		29.17	31.25	31.25	31.25	30.73

N = 16 videos per phase, six indicators (binary coding).

The results in Table (8) show that the overall rate remained stable at a low-level ranging from **(29.17%)** to **(31.25%)** throughout the four phases, which is a negative indication of the absence of a deliberate institutional visual and audio identity; This stability does not reflect adherence to a high standard, but rather stagnation at a low level that has seen no attempt at improvement for over a decade. This is confirmed by the observation that the only elements present are limited to just two indicators that require no recurring effort (the logo, present 100% of the time, and the opening theme music at a rate of 84.38%), while all elements requiring renewed design discipline with each video are completely absent foremost among them the standardization of the color scheme and the design of speaker introductions, both of which have reached an absolute zero without a single exception over fourteen years.

This pattern may be explained by the fact that the two present elements are specifically technical settings that are adjusted once (or come ready-made within the original television broadcast material) without the need to repeat the decision for each video, unlike the absent elements, which presuppose a design decision that is made and applied with conscious consistency; which suggests that what may appear to be the channel's visual identity is a legacy technical effect rather than the product of a

deliberate institutional design policy a finding consistent with the results revealed by the institutional readiness table.

Third Domain: Composite–Integrative

Table (9) presents a synthetic analysis that brings together the dominant value from each of the seven previous axes within a single framework, with the aim of describing the overall trajectory of the channel's development across its four chronological phases without delving into the details of each individual indicator, serving as a final synthesis of all the preceding results.

Table 9. Tracking and Documenting the Channel's Structural Trajectory Across Its Time Phases (Composite Axis)

Phase	Extension Classification	Dominant Presenter	Dominant Format	Dominant Topic	Production Quality	Institutional Readiness	Identity Consistency
First	18.75	40.70	87.50	36.60	28.75	-	29.17
Second	18.75	25.30	93.75	29.20	34.38	-	31.25
Third	62.50	48.40	93.75	34.30	59.38	-	31.25
Fourth	25.00	26.20	87.50	28.30	61.25	-	31.25
Average	31.25	35.15	90.63	32.10	45.94	0.00	30.73

Brief Guide: Channel Content Classification = as indicated in Table (2); Dominant Presenter = the category with the highest actual value at each phase in Table (3); Dominant Format = the percentage of television programs in Table (4); Dominant Topic = the category with the highest actual value at each phase in Table (5). Note: The "Average" column for the "Dominant Presenter" and "Dominant Topic" columns represents the average of the highest values recorded in each phase, not the average of a single fixed category, given that the identity of the dominant category varied across phases. The value for institutional readiness is represented by a "-" in all four-time phases, as it was not historically measured for each period but was measured once at the time the research was conducted (March 16, 2026), which falls outside the time period covered by the analysis (2012–2025) (see Table 7). The actual value (0.00) appears in the "Average" column solely to indicate the result of this single point-in-time measurement, not as an average calculated across the four phases.

The research results presented in Table 9 reveal a clear disparity in the channel's development trajectory across its various axes; the extension content indicators (classification, presenter, and topic) showed notable changes across the four phases, which may indicate that the channel was partially influenced by the circumstances surrounding each phase. However, no historical data is available for the institutional readiness indicators to assess their development across the phases, as their measurement was limited to a single point in time (March 16, 2026), at which they recorded a value of zero, and the identity consistency indicators remained within a very narrow range between (29.17%) and (31.25%) with no significant change. Furthermore, the dominant production format (television program) maintained the highest percentage among all formats, peaking in the second and third phases (93.75%) with no significant change, compared to the limited and fluctuating presence of the remaining formats. It is noted that the top ranking for each indicator was distributed across different phases (the third phase in classification and presenter, the fourth in quality, and the first in subject matter), without any single phase excelling in all axes simultaneously. This suggests that the development may be interpreted as a fragmented response to the circumstances of each phase, rather than as systematic cumulative growth.

These data indicate that the channel's development has been limited to the content level without extending to the institutional and digital infrastructure to the same extent, with a notable

improvement specifically in the production quality index (from 28.75% to 61.25%), which is the only change within the digital-institutional domain, as readiness and identity remained constant; this reflects an unbalanced pattern of development among the channel's various aspects.

Based on the results, the first hypothesis (H1) is confirmed, showing a clear variation in the proportions of extension content across the four-time phases. Hypothesis 2 (H2) is also confirmed; the extent of change in quality control standards for production and publication (32.5 percentage points, from 28.75% to 61.25%) was much greater than the range of change in the visual and audio identity consistency indicators (only 2.08 percentage points, from (29.17%) to (31.25%)), confirming the difference in the nature of the change between the two indicators, as predicted by the hypothesis. The results thus support my research hypotheses to the extent demonstrated by the descriptive analysis of the channel indicators.

9. Conclusions

1. A slight, fluctuating, and unstable evolution in the extension content throughout the four phases of the channel's lifespan, as indicated by the rise in the educational rating from (18.75%) to (62.50%) and its subsequent decline to (25.00%), along with a similar fluctuation in the sources of information between officials, experts, and farmers without a single consistent trend.

2. In practice, the channel is closer to a digital repository of television content than to an independent digital platform targeting a specific audience and operating according to YouTube's standards, as evidenced by the fact that the majority of uploaded videos took the form of television programs (90.63%) across the four phases, while indicators related to digital management such as the channel description, official links, and playlists, remained at zero.

3. A lack of managerial interest in developing the channel, as evidenced by the zero values for institutional and digital readiness indicators, and weak visual identity indicators (with the exception of the consistent logo), which require no significant financial investment; this may indicate that the decision to develop the production template and digital infrastructure was never subject to conscious institutional review.

4. The absence of a specific strategy for the channel's development throughout its lifespan, as evidenced by the fluctuation in most indicators both qualitative and quantitative as illustrated in Table (9), which tracks and documents the channel's developmental trajectory across its four chronological phases.

10. Recommendations

1. It is recommended to establish a clear and consistent editorial plan for the channel's extension content, specifying the sources of information and striking a balanced mix between staff, experts, and farmers in a thoughtful and consistent manner, rather than leaving this subject to random fluctuations between phases.

2. It is recommended that content prepared for publication on the channel be redesigned in accordance with the principles of authentic digital publishing (shorter, single-topic videos), rather than simply reposting material originally prepared for television broadcast as-is, thereby transforming the channel from an archival repository into an active digital platform.
3. It is recommended that management of the channel be entrusted to a team specializing in digital media, which will be responsible for developing a comprehensive institutional plan (channel description, official links, playlists, visual and audio identity), given that most of these elements require no significant financial investment, but rather a simple administrative decision.
4. It is recommended that follow-up specialized research be conducted to develop a comprehensive digital strategy for the Agricultural Extension Channel, based on the findings of this research.

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