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Comparative reach and retention of print versus audio-visual extension communication channels

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Abstract

As one Slovenian advisor put it: 'We print leaflets farmers use to start fires, and make radio spots that play while they are on tractors.' This research compared print versus audio-visual extension channels across six Slovenian regions. A randomized crossover design with 284 farmers was used between February and November 2023. Audio-visual channels achieved 84.1% reach versus 62.4% for print ($p < 0.001$). Four-week recall was 58.9% for audio-visual versus 31.2% for print. However, print showed advantages for reference content (41.3% repeated consultation vs 12.7%). Behavior change was 34.7% audio-visual, 18.6% print. Channel selection should match content type rather than defaulting to one format.

Keywords: Communication channels, print media, audio-visual media, message retention, extension reach, farmer behavior, information recall, agricultural communication, Slovenia, channel effectiveness

Introduction

According to Leeuwis ^[1], the medium shapes not just who receives a message but how deeply it registers. A leaflet can sit on a table for months; a broadcast vanishes when it ends. Each channel carries trade-offs that extension organizations rarely measure ^[2].

In Slovenia, the Agricultural Advisory Service employs 340 advisors serving 69,000 farming operations ^[3]. Communication tools range from printed bulletins to radio, television, and digital platforms. Yet channel decisions are typically based on tradition rather than evidence.

This research compared print and audio-visual channels using a crossover design exposing the same farmers to the same content through different media.

Instrument Development

Content on three topics was developed in parallel formats. Print: leaflets, guides, posters. Audio-visual: radio segments, short videos, animated infographics. Content equivalence was verified by five extension communication specialists.

Materials and Methods

Materials

The research was conducted through the School of Agriculture, University of Ljubljana, Slovenia, between February and December 2023. A total of 284 farmers from six regions participated. Farmers were randomly assigned in a crossover: Group 1 ($n=142$) received Topic A via print, Topic B via audio-visual; Group 2 the reverse. Knowledge tests (36 items per topic) were administered at baseline, one week, and four weeks.

Methods

Randomized crossover design. Print distributed through advisory offices; audio-visual via radio partnerships and online platform. Reach, retention, and behavior change were measured. Mixed-effects models with farmer as random effect and channel as fixed effect were used in R v.4.3. Ethics: University of Ljubljana Ethics Committee (Protocol UL-EC-2023-015, January 15, 2023).

Results

Table 1: Reach, retention, and behavior change by channel ($n=284$)

Metric	Print	Audio-Visual	p-value
Initial reach (%)	62.4	84.1	< 0.001
Recall 1 week (%)	48.7	73.6	< 0.001
Recall 4 weeks (%)	31.2	58.9	< 0.001
Behavior change (%)	18.6	34.7	< 0.001
Cost/farmer (EUR)	3.40	8.60	-
Repeated consultation (%)	41.3	12.7	< 0.001

Audio-visual outperformed on reach, retention, and behavior change. But print showed clear advantage in

repeated consultation (41.3% vs 12.7%).

Table 2: Channel effectiveness by content type

Content Type	Print (%)	AV (%)	AV Advantage
Procedural (how-to)	26.3	64.8	+38.5 pts
Factual (schedules)	43.7	47.2	+3.5 pts
Conceptual	34.1	52.8	+18.7 pts

Audio-visual advantage was largest for procedural content (+38.5 pts) but nearly vanished for factual reference content (+3.5 pts).

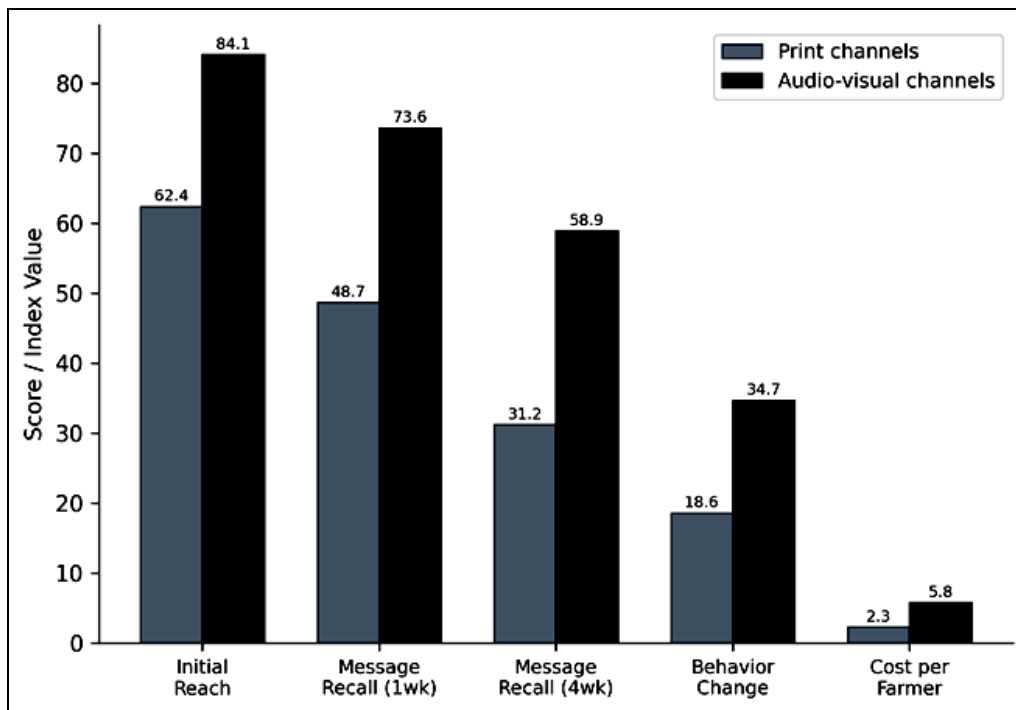


Fig 1: Print versus audio-visual performance across five metrics

Audio-visual dominated reach and retention while print excelled in cost-efficiency.

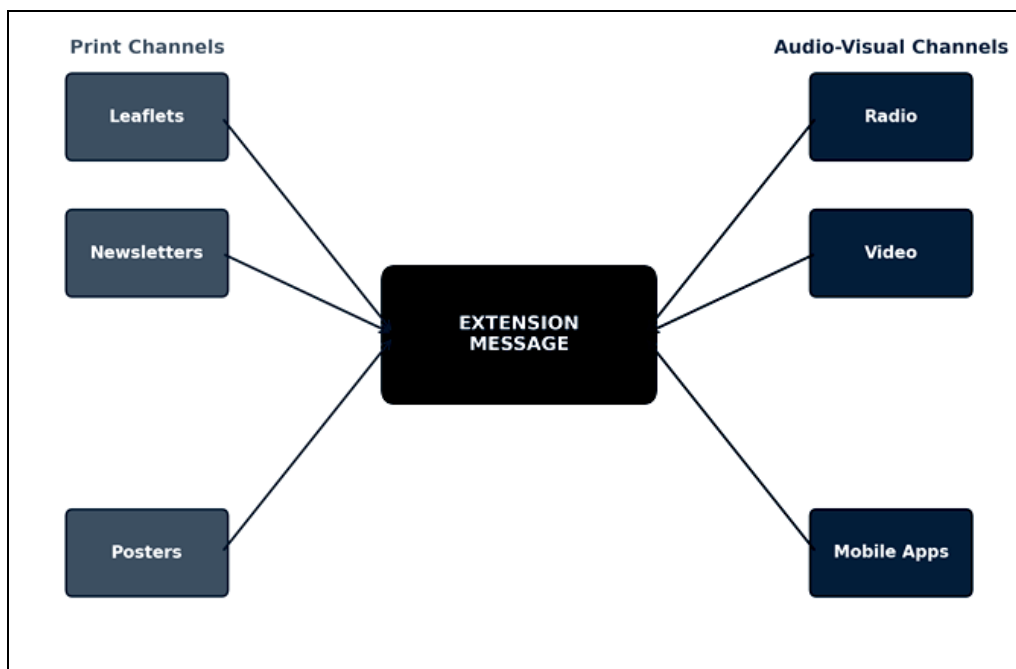


Fig 2: Extension communication channel model

Discussion

The results challenge the assumption that one channel is inherently superior. Audio-visual wins for procedural content consistent with multimedia learning theory ^[4] but near-parity for factual content and the repeated consultation advantage for print suggest channel matching, not replacement ^[5].

The 2.5x cost difference also matters. A blended approach audio-visual for demonstrations, print for reference would maximize impact per expenditure. The 41.3% who returned to print materials confirms their value as reference tools ^[6].

Practical Applications

Slovenian advisory services should adopt content-matched channel strategy: audio-visual for procedural and conceptual messages, print for factual reference. QR codes in print linking to videos could bridge both channels cost-effectively.

Conclusion

Audio-visual channels achieve substantially higher reach, retention, and behavior change for procedural content, while print retains advantages as reference tools. Neither is universally superior. A content-matched blended strategy leveraging distinct strengths of each format is recommended.

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