ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue X October 2026

Artificial Intelligence and Over-The-Top Streaming Adoption in the Zimbabwean Broadcasting Sector: Stakeholder Perceptions of Effects on Audience Engagement, Revenue Generation and Operational Efficiency

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DOI: https://doi.org/10.51244/IJRSI.2026.1310000025

Received: 04 October 2026; Accepted: 09 October 2026; Published: 29 October 2026

ABSTRACT

This study examines how Artificial Intelligence (AI) adoption and Over-the-Top (OTT) streaming integration, treated as two distinct technologies, are associated with perceived audience engagement, revenue generation, and operational efficiency in Zimbabwe's broadcasting sector. An integrated framework drawing on the Diffusion of Innovation Theory, the Technology Acceptance Model, the Resource-Based View and Digital Transformation Strategy informed the questionnaire design and the interpretation of results. A convergent mixed-methods design was applied to an online questionnaire completed by 38 stakeholders (an approximate response rate of 38%) from the regulatory authority, public, private and campus broadcasters, content producers and distribution entities. Closed-ended items were analysed using descriptive statistics, Cronbach's alpha, Spearman's rank-order correlation and Kruskal–Wallis tests, while responses to three open-ended questions were analysed thematically. AI adoption is at an early stage: 71.1% of respondents reported that their organisations had started using AI in some areas, but only 7.9% reported full integration, with adoption highest among content producers and distributors ($H(2) = 10.44$, $p = .005$). Respondents most often agreed that AI had made operations more efficient (61%) and least often that it had increased revenue (18%; 53% disagreed). AI use intensity was moderately associated with perceived operational efficiency ($r_s = .46$, $p = .004$), and AI adoption stage was weakly to moderately associated with perceived audience reach ($r_s = .34$, $p = .035$), whereas associations with revenue were weak and non-significant. OTT integration was not significantly associated with any organisational outcome, although large majorities agreed that streaming had widened audience access (79%) and changed how broadcasters make money (79%). Qualitative responses attributed reach and access gains mainly to streaming, production efficiencies mainly to AI, and identified misinformation, regulatory design and data protection as the principal policy risks. Because the findings rest on cross-sectional perceptions from a small purposive sample, they indicate associations rather than causal effects. The study offers an exploratory, technology-disaggregated account of AI and OTT adoption across the Zimbabwean broadcasting value chain and draws implications for implementing the National Artificial Intelligence Strategy 2026–2030.

Keywords: Artificial Intelligence, OTT Streaming, Broadcasting, Audience Engagement, Revenue Generation, Operational Efficiency, Zimbabwe, Digital Transformation

INTRODUCTION

The global broadcasting industry is undergoing a significant digital transformation driven by Artificial Intelligence (AI) and Over-the-Top (OTT) streaming technologies. AI technologies such as machine learning, predictive analytics, recommendation systems, automated metadata tagging, and intelligent advertising are reshaping how media content is produced, distributed, monetised, and consumed. At the same time, OTT streaming platforms are disrupting traditional broadcasting models by enabling direct-to-consumer content delivery over the internet (Jenkins, 2006; PwC, 2025).

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Although the two technologies are often discussed together, they act on different parts of the broadcasting value chain. AI is primarily a *process* technology: it is applied inside the organisation to automate production tasks, analyse audiences and optimise advertising. OTT is primarily a *distribution* technology: it changes how, where and on what devices audiences reach content, and therefore alters the competitive and revenue structure of the market. Treating AI and OTT as interchangeable risks obscuring which technology is associated with which outcome, a distinction this study makes explicit.

In Africa, the growth of mobile internet use and smartphone penetration has accelerated the uptake of digital and streaming media. Afrobarometer data from 34 countries show that regular use of social media or the internet for news rose from 24% to 43% between 2014/2015 and 2019/2021, although radio remains the most widely used news source (Conroy-Krutz & Koné, 2022). The pace of technological integration nevertheless varies across the continent because of infrastructural disparities, regulatory fragmentation, skills shortages, and economic constraints (PwC, 2024). Zimbabwe reflects these dynamics. Broadcasters and publishers increasingly distribute content through YouTube, Facebook, TikTok and other platforms, yet monetisation remains weak (Chiridza & Mare, 2025), and studies of Zimbabwean newsrooms describe AI adoption as nascent, individually driven and largely without formal policy (Mugadzaweta, 2025; Sibanda et al., 2025). The launch of the National Artificial Intelligence Strategy 2026–2030 in March 2026 (Government of Zimbabwe, 2026) and the national development agenda set out in Vision 2030 (Government of Zimbabwe, 2018) make evidence on sector-level adoption timely for policy.

Existing African studies, however, focus mainly on newsrooms and journalism practice, rely predominantly on qualitative interviews with journalists and editors, and rarely examine OTT distribution alongside AI or relate adoption to organisational performance. Few include the regulator and signal distribution entities, whose decisions shape the conditions under which broadcasters adopt new technologies. This study addresses these gaps by asking four research questions:

- **RQ1:** What are the levels of AI adoption and OTT streaming integration across stakeholder categories in Zimbabwe's broadcasting sector?
- **RQ2:** How is AI adoption associated with perceived audience engagement, revenue generation, and operational efficiency?
- **RQ3:** How is OTT streaming integration associated with the same three outcomes?
- **RQ4:** What opportunities, risks and strategic responses do stakeholders identify in relation to AI and OTT adoption?

The study makes three contributions. First, it provides sector-wide survey evidence spanning the regulator, broadcasters, content producers and distribution entities, rather than a single newsroom or organisation type. Second, it disaggregates AI from OTT and relates each to three distinct performance dimensions, showing that the two technologies are associated with different outcomes. Third, it operationalises an integrated DOI–TAM–RBV–Digital Transformation framework in an emerging-market broadcasting context and identifies where the evidence supports or qualifies these theories. Given the sample size, the study is explicitly exploratory and is intended to generate propositions for larger confirmatory research.

LITERATURE REVIEW

Artificial Intelligence and Broadcasting Transformation

AI has become a major driver of innovation in broadcasting. AI technologies are integrated into media workflows to automate repetitive tasks, optimise advertising, personalise content delivery and improve audience analytics. Machine learning systems help broadcasters analyse viewer behaviour, generate predictive insights and deliver customised recommendations. Industry analyses report that AI-enabled personalisation and automation are central to how leading media companies seek to retain audiences and control costs (PwC, 2025). AI also enables automated subtitling, metadata generation, audience segmentation and intelligent advertising insertion.

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Within broadcasting organisations, AI-driven analytics allow management to make data-informed decisions on content production, scheduling and audience engagement. From a Resource-Based View (RBV), digital capabilities and data assets are organisational resources that can generate competitive advantage when they are valuable, rare, and difficult to imitate (Barney, 1991). This implies that AI benefits should depend not only on whether AI is adopted but on how intensively and capably it is used.

OTT Streaming and Digital Media Disruption

OTT streaming services bypass terrestrial and satellite distribution and enable internet-based, direct-to-consumer content delivery to smartphones, tablets, laptops and smart televisions. Globally, demand for personalised, on-demand and mobile-accessible content has driven rapid OTT growth, and advertising-supported video-on-demand continues to expand (PwC, 2025). In Africa, mobile subscriptions now exceed fixed broadband subscriptions, which supports mobile-first streaming, particularly among younger audiences, but expensive data, limited broadband and economic instability constrain growth (PwC, 2024).

Zimbabwe's broadcasting sector remains at an early stage of OTT development. Broadcasters increasingly distribute content through online platforms, yet monetisation is inconsistent. Dependence on foreign-owned platforms exposes local media to algorithmic control, limited advertising returns, and reduced ownership of audience data; platforms offer little meaningful revenue sharing, and YouTube payments to Zimbabwean broadcasters are too modest to sustain daily operations (Chiridza & Mare, 2025).

Audience Engagement and AI/OTT Adoption

Audience engagement refers to the extent to which audiences access, interact with, and remain attentive to media content across platforms. AI and OTT contribute to engagement through different mechanisms. AI acts through *personalisation and understanding*: recommendation systems and analytics help organisations understand and target audiences. OTT acts through *access and reach*: it allows content to be consumed anytime, anywhere, and beyond the footprint of terrestrial signals, including by diaspora audiences (Jenkins, 2006; PwC, 2024). In developing markets such as Zimbabwe, both mechanisms are moderated by data costs, connectivity and electricity reliability.

Revenue Generation and Digital Monetisation

AI and OTT technologies are changing media monetisation through targeted and programmatic advertising, subscription services and audience analytics. OTT creates potential revenue through subscription video-on-demand, advertising-supported streaming, transactional streaming and branded content. In Zimbabwe, however, low purchasing power, an underdeveloped digital advertising market and currency instability limit these opportunities, and news publishers continue to rely on unstable advertising, subscription and licensing income (Chiridza & Mare, 2025). Many organisations therefore struggle to convert digital audience growth into sustainable revenue.

Operational Efficiency and AI Automation

Operational efficiency refers to an organisation's ability to optimise workflows, reduce costs and improve productivity. AI contributes through automated scheduling, intelligent content management, predictive analytics, automated editing and workflow automation. Studies in Southern African newsrooms report that AI is used mainly for routine production tasks such as transcription, translation, content discovery and data processing, and that efficiency gains are the benefit most commonly recognised by practitioners (Munoriyarwa et al., 2023; Radebe & Msimanga, 2025). Zimbabwean broadcasters face constraints including limited finance, outdated infrastructure and skills shortages, so efficiency gains are likely to be uneven.

Empirical Evidence from African Media Contexts

A growing body of African research provides a basis for comparison. In South Africa, Munoriyarwa et al. (2023) found that AI use in mainstream newsrooms was confined mainly to routine tasks and was accompanied by scepticism about job losses and editorial control. In Zimbabwe, Sibanda et al. (2025) reported that journalists

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use AI for sourcing, news gathering, and writing but that AI has not been fully embraced and is regarded as a double-edged sword. Mugadzaweta (2025), studying Zimpapers and Alpha Media Holdings, described adoption as nascent and driven by individual initiative rather than organisational strategy, with no formal AI policies, limited training and a wait-and-see posture. Radebe and Msimanga (2025) found that editors in South Africa and Zimbabwe credit generative AI with efficiency and quality gains while insisting on human oversight and raising ethical concerns. On the distribution side, Chiridza and Mare (2025) showed that digital platforms are now central to Zimbabwean news distribution but generate little revenue for publishers.

Three limitations of this literature motivate the present study. First, it is predominantly newsroom-centred and print-oriented; broadcasters, regulators and signal distribution entities are rarely studied together. Second, it is mainly qualitative, so the strength of associations between adoption and outcomes is seldom estimated. Third, AI and platform distribution are usually studied separately, leaving their relative contributions to engagement, revenue and efficiency unclear. The present study responds by surveying stakeholders across the broadcasting value chain and by measuring AI and OTT adoption separately.

Theoretical Framework

The study integrates four complementary perspectives. Each was used to define specific variables, to select questionnaire items and to interpret the results, as summarised in Table 1.

Diffusion of Innovation Theory

The Diffusion of Innovation (DOI) Theory explains how innovations spread through social systems over time and classifies adopters as innovators, early adopters, early majority, late majority and laggards (Rogers, 2003). DOI informed the measurement of adoption as a staged variable (from not adopted, through exploring and partial use, to full integration) and the comparison of adoption levels across organisational categories, on the expectation that organisations with more digitally oriented business models would be earlier adopters.

Technology Acceptance Model

The Technology Acceptance Model (TAM) explains technology use through perceived usefulness and perceived ease of use (Davis, 1989). TAM informed the five perceived-benefit items, which capture the perceived usefulness of AI for efficiency, cost, content quality, audience understanding, and revenue. Perceived ease of use was not measured directly; the skills-shortage and resistance-to-change items serve as partial proxies for the effort and capability required to use the technologies.

Resource-Based View

The RBV positions digital capabilities, technological infrastructure and data analytics as strategic resources capable of generating competitive advantage (Barney, 1991). The RBV informed the measurement of resource-related barriers (implementation cost, technical skills and ICT infrastructure) and of strategic resource commitments (investment in AI, launching an organisation's own OTT platform and forming partnerships). It also motivated the inclusion of AI *use intensity*, alongside adoption stage, as an indicator of how deeply the capability is embedded.

Digital Transformation Strategy

Digital transformation is a process in which digital technologies trigger strategic responses that alter an organisation's value creation, structures and capabilities (Vial, 2019); digital transformation strategies coordinate the use of technologies, changes in value creation, structural changes and financial aspects (Matt et al., 2015). This perspective informed the items on organisational responses to digital disruption, the perceived effectiveness of those responses, the regulatory and policy environment, and expectations about future hybrid broadcast–streaming models.

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Integrated Conceptual Framework

Taken together, the framework treats AI adoption and OTT integration as two separate independent variables. DOI explains *how far* each has diffused; TAM explains *why* stakeholders perceive value in it; the RBV explains *which resources* condition its benefits; and Digital Transformation Strategy explains *how organisations and policy respond*. The three dependent variables are perceived audience engagement, revenue generation and operational efficiency. The framework anticipates that AI, as a process technology, will be associated mainly with operational efficiency, while OTT, as a distribution technology, will be associated mainly with audience access and reach; revenue effects are expected to be weaker for both because they depend on market conditions outside the organisation.

Table 1: Theoretical constructs, operationalisation and use in the study

Theory	Construct	Questionnaire items (Section)	Use in analysis
Diffusion of Innovation (Rogers, 2003)	Adoption stage; adopter categories	AI adoption stage (B1); AI use intensity (B2); OTT integration (C1); organisation type (A1)	Adoption levels (RQ1); group comparisons; interpretation of uneven diffusion
Technology Acceptance Model (Davis, 1989)	Perceived usefulness; ease of use (proxy)	Five AI benefit items (B4): efficiency, cost, quality, audience, revenue; skills and resistance items (E2, E5)	Dependent variables for RQ2; interpretation of acceptance
Resource-Based View (Barney, 1991)	Strategic resources and capabilities	Cost, skills, infrastructure barriers (E1–E3); AI investment, own OTT platform, partnerships (D1); AI use intensity (B2)	Barriers analysis; explanation of why use intensity rather than adoption stage relates to efficiency
Digital Transformation Strategy (Matt et al., 2015; Vial, 2019)	Strategic response; policy environment; future model	Responses to disruption and effectiveness (D1–D2); four policy items (F1–F4); three outlook items (G1–G3); open-ended items (H1–H3)	RQ4; implications for organisations and policy

METHODOLOGY

Research Design

The study adopted a convergent mixed-methods design within a pragmatic research philosophy (Creswell & Plano Clark, 2018). Quantitative and qualitative data were collected simultaneously through a single instrument: closed-ended items provided the quantitative strand, and three open-ended questions provided the qualitative strand. The two strands were analysed separately and then integrated during interpretation. The design is cross-sectional and exploratory.

Population, Sampling and Respondents

The study population comprised professionals working in Zimbabwe's broadcasting ecosystem: the broadcasting regulator, public, private (commercial) and campus broadcasters, content producers and distributors, and signal carriers. Because no complete sampling frame of individual broadcasting professionals exists, non-probability purposive sampling was used to reach respondents with direct knowledge of technology adoption in their organisations. The questionnaire was distributed electronically to approximately 100 identified stakeholders, and 38 completed questionnaires were received between 25 March and 10 April 2026, an approximate response rate of 38%. All 38 questionnaires were complete for the closed-ended items, and the open-ended questions were answered by 33 to 34 respondents each.

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Table 2 summarises the respondent profile. Respondents were experienced and highly qualified: 47.4% had more than 15 years of industry experience and 86.8% held a bachelor's or master's degree. For group comparisons, organisations were combined into three categories: the regulatory authority (n = 15), broadcasters (public, private and campus; n = 15), and content producers, distributors and signal carriers (n = 8).

Table 2: Respondent profile (n = 38)

Characteristic	**Category**	**n**	**%**
Organisation type	Regulatory authority	15	39.5
	Public broadcaster	7	18.4
	Private (commercial) broadcaster	6	15.8
	Campus radio	2	5.3
	Content producer	6	15.8
	Content distributor	1	2.6
	Signal carrier	1	2.6
Role	Executive/senior management	13	34.2
	Regulatory officer	9	23.7
	Content creator/producer	7	18.4
	Technical / IT staff	5	13.2
	Marketing/advertising	2	5.3
	Content monitoring and compliance	1	2.6
	Journalist	1	2.6
Industry experience	Less than 5 years	9	23.7
	5–10 years	5	13.2
	11–15 years	6	15.8
	More than 15 years	18	47.4
Highest education	Diploma	5	13.2
	Bachelor's degree	16	42.1
	Master's degree	17	44.7

Questionnaire Development

The questionnaire was developed from the literature reviewed in Section 2 and the constructs in Table 1. It comprised eight sections: (A) respondent and organisational profile (four items); (B) AI adoption, comprising adoption stage, frequency of personal AI use, areas of AI use and five perceived-benefit items; (C) OTT

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streaming, comprising extent of OTT integration, overall impact of OTT on traditional broadcasting and four streaming-impact items; (D) organisational responses to digital disruption and their perceived effectiveness; (E) five barrier items; (F) four items on the regulatory and policy environment; (G) three future-outlook items; and (H) three open-ended questions on opportunities, policy risks and recommended strategies. Attitudinal items used a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

The variables were operationalised as follows. *AI adoption* was measured by adoption stage (1 = not adopted; 2 = planning or exploring; 3 = using AI in some areas; 4 = fully integrated) and by *AI use intensity* (1 = occasionally to 5 = all the time). *OTT integration* was measured on a four-point scale (1 = not at all; 4 = quite extensively). *Operational efficiency* was the mean of the items "AI has made our operations more efficient" and "AI has helped reduce production costs". *Audience engagement* was measured by "AI has helped us better reach and understand our target audience" (AI-attributed) and "Streaming has made content easier for audiences to access" (streaming-attributed). *Revenue generation* was measured by "AI has contributed to increased revenue for our organisation" (AI-attributed) and "Streaming has changed how broadcasters make money" (streaming-attributed). The instrument did not include an OTT-specific operational efficiency item, so the association between OTT integration and efficiency was examined using the AI-attributed efficiency measure only, a limitation noted in Section 7.

Validity and Reliability

Content validity was supported by deriving items from established theory and prior studies (Table 1). Internal consistency was assessed with Cronbach's alpha (Table 3). The perceived AI benefits scale (α = .80), the operational efficiency composite (α = .72), the streaming impact scale (α = .80), and the policy environment scale (α = .90) exceeded the conventional .70 threshold. The barriers items (α = .63) and the future outlook items (α = −.06) did not form reliable scales; they measure conceptually distinct issues and were therefore analysed as individual items rather than as composites. For the qualitative strand, trustworthiness was supported by retaining respondents' own wording, by reporting the frequency of each theme so that the weight of evidence is visible, and by triangulating themes against the quantitative results.

Table 3: Reliability of multi-item measures (n = 38)

Measure	Items	Cronbach's α	M	SD	Treatment
Perceived AI benefits	5	.80	3.25	0.86	Composite
Operational efficiency (AI)	2	.72	3.43	1.03	Composite
Streaming impact	4	.80	4.03	0.91	Composite
Regulatory and policy environment	4	.90	3.45	1.10	Composite
Barriers to adoption	5	.63	–	–	Items analysed separately
Future outlook	3	−.06	–	–	Items analysed separately

Note: M and SD are reported on the 1–5 scale for composites only.

Data Collection

The questionnaire was administered online between 25 March and 10 April 2026. Respondents were informed of the purpose of the study, its voluntary nature and the anonymity of responses before beginning. No names, e-mail addresses or other identifying information were collected.

Data Analysis

Quantitative data were analysed in three steps. First, frequencies, percentages, means (M), standard deviations (SD), and the percentages agreeing (4–5) and disagreeing (1–2) were computed for all items. Second, because

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the adoption variables are ordinal and the sample is small, associations between adoption and outcomes were estimated with Spearman's rank-order correlation coefficient (r_s), interpreted using Cohen's (1988) guidelines (approximately .10 small, .30 moderate, and .50 large), with two-tailed significance at $p < .05$. Third, differences between the three stakeholder groups were tested with the Kruskal–Wallis H test. Because 18 primary correlations were estimated (three adoption variables by six outcome measures), results are also considered against a Bonferroni-adjusted threshold ($\alpha = .05/18 \approx .003$), and p-values between .003 and .05 are treated as tentative.

Qualitative data from the three open-ended questions were analysed using reflexive thematic analysis (Braun & Clarke, 2006): responses were read repeatedly, coded inductively, grouped into themes, and counted by the number of respondents mentioning each theme (a response could contain more than one theme). The two strands were integrated through a joint display (Table 7) that sets each quantitative result alongside the corresponding qualitative theme and records whether the strands converge, complement, or diverge (Creswell & Plano Clark, 2018).

FINDINGS AND DISCUSSION

AI and OTT Adoption in Zimbabwe's Broadcasting Sector (RQ1)

AI adoption is at an early stage (Table 4). Most respondents (71.1%) reported that their organisations had started using AI in some areas, 21.1% reported that their organisations were still planning or had not adopted AI, and only 7.9% reported full integration (M = 2.79, SD = 0.70). Personal use was moderate: 55.2% used AI tools occasionally or somewhat regularly, and only 13.1% at very high levels or all the time. AI was used mainly for content production (60.5% of respondents), customer engagement (36.8%), and audience analytics (26.3%); news automation and advertising optimisation were each reported by 13.2%. This pattern, with AI concentrated in production tasks rather than in monetisation, mirrors the newsroom findings of Munoriyarwa et al. (2023) and Mugadzaweta (2025).

OTT integration was more advanced than AI adoption: 76.3% of respondents reported moderate or extensive OTT integration, and 10.5% reported none (M = 2.95, SD = 0.93). In response to digital disruption, 39.5% of respondents' organisations had launched a digital transformation programme, 39.5% had invested in AI, 34.2% had formed partnerships, and 34.2% had started their own streaming platform, while 15.8% reported having no clear strategy. Just over half (52.6%) rated these responses as effective or very effective, and 39.5% were neutral.

Table 4: AI adoption and OTT integration by stakeholder group

Measure	**Regulator (n = 15)**	**Broadcasters (n = 15)**	**Producers/ distributors(n= 8)**	**All (n = 38)**	**Kruskal–Wallis**
AI adoption stage (1–4), M	2.47	2.80	3.38	2.79	H(2) = 10.44, p = .005
Fully integrated, n	0	0	3	3	
AI use intensity (1–5), M	2.20	2.07	3.00	2.32	H(2) = 5.03, p = .081
OTT integration (1–4), M	2.60	3.00	3.50	2.95	H(2) = 4.97, p = .083
AI increased revenue (1–5), M	2.73	1.93	3.38	2.55	H(2) = 9.65, p = .008
Policy environment (1–5), M	3.95	3.23	2.94	3.45	H(2) = 4.75, p = .093

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Note: Producers/distributors comprise content producers (6), a content distributor (1), and a signal carrier (1). Broadcasters comprise public (7), private (6), and campus (2) broadcasters.

Adoption differed significantly across stakeholder groups ($H(2) = 10.44$, $p = .005$). Content producers and distributors reported the highest AI adoption ($M = 3.38$), and all three respondents reporting full integration were in this group; broadcasters were intermediate ($M = 2.80$), and the regulatory authority was lowest ($M = 2.47$). OTT integration followed the same order, but the difference was not significant ($p = .083$). Among broadcasters, public and private broadcasters did not differ in AI adoption ($M = 2.71$ and 2.83), and public broadcasters reported somewhat higher OTT integration than private broadcasters ($M = 3.43$ vs 2.67), although this difference was not significant ($p = .091$). Consistent with DOI, adoption is uneven, with organisations whose business is content creation and distribution acting as early adopters (Rogers, 2003). The genuine survey did not include online-only broadcasters, so the study cannot test whether digital-native broadcasters lead adoption; the evidence instead points to content producers as the leading adopter category.

Table 5: Descriptive statistics for perceived outcomes and barriers (n = 38)

Item	**M**	**SD**	**% agree**	**% disagree**
AI-attributed outcomes				
AI has made our operations more efficient	3.68	1.12	61	13
AI has helped us better reach and understand our target audience	3.42	1.15	55	21
AI has improved the quality of our content	3.42	1.20	53	18
AI has helped reduce production costs	3.18	1.20	37	29
AI has contributed to increased revenue for our organisation	2.55	1.08	18	53
Streaming-attributed outcomes				
Streaming has made content easier for audiences to access	4.26	1.13	79	8
Streaming has changed how broadcasters make money	4.13	1.02	79	8
Streaming platforms have reduced TV/radio viewership	3.97	1.15	68	13
Streaming has made the broadcasting market more competitive	3.74	1.29	63	18
Barriers				
The cost of implementing these technologies is too high	3.55	1.16	50	16
There aren't enough people with the right technical skills	3.11	1.33	39	32
Our internet and ICT infrastructure isn't good enough	3.05	1.39	42	37
People within the organisation are resistant to change	2.68	1.45	39	50
Current regulations make it hard to innovate	2.53	1.18	18	53
Future outlook				

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AI will become central to broadcasting operations in 5–10 years	4.29	1.04	84	5
A hybrid broadcast–streaming approach will become the standard	3.97	1.13	71	13
Streaming will eventually replace traditional TV and radio	3.34	1.36	50	24

Note: Five-point scale (1 = strongly disagree, 5 = strongly agree). % agree = ratings of 4–5; % disagree = ratings of 1–2.

Table 6: Spearman correlations between adoption and perceived outcomes (n = 38)

Outcome measure	**AI adoption stage**	**AI use intensity**	**OTT integration**
Operational efficiency (AI composite)	.22 (p = .178)	.46** (p = .004)	.24 (p = .143)
Content quality (AI)	.17 (p = .308)	.40* (p = .012)	−.03 (p = .858)
Audience reach and understanding (AI)	.34* (p = .035)	.31 (p = .060)	.09 (p = .595)
Increased revenue (AI)	.21 (p = .216)	.17 (p = .296)	.14 (p = .397)
Audience access (streaming)	.08 (p = .645)	.27 (p = .106)	.19 (p = .263)
Change in revenue models (streaming)	−.04 (p = .810)	.05 (p = .744)	.04 (p = .820)

Note: *p < .05;* * p < .01 (two-tailed). Bonferroni-adjusted threshold for 18 tests: p < .003. The individual efficiency item correlated with AI adoption stage at r_s = .38 (p = .020) and with AI use intensity at r_s = .51 (p = .001).

AI Adoption and Operational Efficiency (RQ2)

Operational efficiency was the outcome most often attributed to AI. Sixty-one per cent of respondents agreed that AI had made their operations more efficient (M = 3.68), and 53% that it had improved content quality, although fewer (37%) agreed that it had reduced production costs (Table 5). AI use intensity showed a moderate positive association with the operational efficiency composite (r_s = .46, p = .004) and a large association with the efficiency item (r_s = .51, p = .001), the only result that remains significant under the Bonferroni adjustment. AI adoption stage was associated with the efficiency item (r_s = .38, p = .020) but not significantly with the composite (r_s = .22, p = .178).

The qualitative data converge with this result. Thirteen respondents described efficiency, speed, or cost benefits, mostly attributing them to AI:

"It reduces costs of production but shifts focus to running technologies which constantly change." (R6, private broadcaster)

"Cost Effectiveness to Production and Post-Production Processing. Increasing Content Output." (R24, content distributor)

These findings qualify, rather than confirm, the claim that AI adoption improves efficiency. The association is moderate rather than strong, and it is driven by how intensively AI is used rather than by whether an organisation has formally adopted it. This is consistent with the RBV: an AI capability yields benefits when it is embedded in routine work, not merely acquired (Barney, 1991). R6's observation also signals that efficiency gains in

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production may be partly offset by new costs of maintaining rapidly changing technologies, which helps explain why perceived cost reduction was weaker than perceived efficiency.

AI Adoption and Audience Engagement (RQ2)

Fifty-five per cent of respondents agreed that AI had helped their organisations better reach and understand their target audience (M = 3.42). AI adoption stage was moderately associated with this item (r_s = .34, p = .035), and AI use intensity showed a similar but non-significant association (r_s = .31, p = .060). Neither survives the Bonferroni adjustment, so the relationship should be regarded as tentative. Perceived audience gains from AI were strongly correlated with perceived operational efficiency (r_s = .51, p = .001), suggesting that respondents who experience AI benefits tend to experience them across several dimensions at once, consistent with TAM's emphasis on overall perceived usefulness (Davis, 1989). In the open-ended responses, AI's contribution to engagement was framed in terms of personalisation, analytics, and segmentation rather than reach, for example, "deliver personalized and interactive content, and modernize operations through data-driven insights" (R29, public broadcaster).

AI Adoption and Revenue Generation (RQ2)

Revenue was the weakest outcome. Only 18% of respondents agreed that AI had increased their organisation's revenue, while 53% disagreed (M = 2.55). Associations between revenue and AI adoption stage (r_s = .21, p = .216) and use intensity (r_s = .17, p = .296) were weak and non-significant. Revenue perceptions differed significantly by group (H(2) = 9.65, p = .008): broadcasters were the least likely to report AI-driven revenue (M = 1.93), compared with content producers and distributors (M = 3.38). Respondents who perceived audience gains from AI were more likely to perceive revenue gains (r_s = .46, p = .004), but the two are clearly not equivalent, since far more respondents reported audience gains than revenue gains.

The revenue results are weaker than the moderate relationship anticipated in the conceptual framework: for broadcasters in particular, AI has not yet translated into revenue. Only 13.2% of respondents reported using AI for advertising optimisation, the application most directly linked to revenue. This is consistent with Chiridza and Mare (2025), who found that Zimbabwean publishers have not converted platform distribution into sustainable income, and suggests that the binding constraint on revenue lies in the advertising market and business models rather than in technology adoption alone.

OTT Integration and Organisational Outcomes (RQ3)

In contrast to AI, OTT integration was not significantly associated with any organisational outcome measure (r_s between −.03 and .24; all p > .14). Yet respondents agreed strongly that streaming has transformed the market: 79% agreed that streaming made content easier for audiences to access (M = 4.26), 79% that it had changed how broadcasters make money (M = 4.13), 68% that it had reduced TV and radio viewership and 63% that it had made the market more competitive. Respondents' own OTT integration was also unrelated to these market-level perceptions ($r_s \leq .19$). Greater OTT integration was, however, associated with lower perceived implementation cost as a barrier (r_s = −.38, p = .019), suggesting that organisations that have integrated streaming find the cost hurdle less prohibitive, or that those facing lower costs were more able to integrate.

Two interpretations are plausible. First, OTT is experienced primarily as a *structural change in the market* that affects all broadcasters regardless of their own integration, rather than as an organisational capability that yields private gains. Second, the instrument measured organisational outcomes mainly in AI-attributed terms, so it may not capture OTT-specific organisational benefits. The qualitative data support the first interpretation: fifteen respondents described wider reach and accessibility, and these comments attributed reach almost exclusively to streaming, for example:

"Online streaming expands audiences by reaching beyond traditional TV and radio signals and reaching diaspora through mobile platforms." (R5, regulatory authority)

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue X October 2026

"With online streaming, geographical barriers are broken, and local content can now reach a global audience, showcasing Zimbabwe's rich culture and stories to the world." (R13, regulatory authority)

These results show that AI and OTT should not be treated as interchangeable. AI is perceived mainly as a process technology associated with internal efficiency and, more tentatively, with audience understanding; OTT is perceived mainly as a distribution technology that widens access and disrupts revenue models across the sector, without (yet) measurable organisation-level returns.

Barriers, Policy Environment and Stakeholder Perspectives (RQ4)

Implementation cost was the most widely recognised barrier (50% agreed; M = 3.55), followed by ICT infrastructure (42%), skills shortages (39%) and resistance to change (39%). Regulation was the least recognised barrier: only 18% agreed that current regulations make it hard to innovate, and 53% disagreed. Perceptions of the policy environment were moderately positive (M = 3.45), with 55% agreeing that government is doing enough to support AI adoption. The regulatory authority rated the policy environment more favourably (M = 3.95) than broadcasters (M = 3.23) or content producers and distributors (M = 2.94); this difference was not significant (p = .093) but should be interpreted with the composition of the sample in mind (Section 7). Looking ahead, 84% agreed that AI will become central to broadcasting operations within 5–10 years, and 71% expected hybrid broadcast–streaming models to become standard, while only half expected streaming to replace traditional broadcasting.

The open-ended responses add detail that the closed items did not capture (Table 7). The most frequently cited policy risk was misinformation, deepfakes and harmful content (14 respondents), followed by concerns about the design of regulation itself (10 respondents), including both over-regulation ("Overregulation can kill growth", R19, public broadcaster) and regulation lagging behind technology ("the risk of coming up with policies that are rendered null upon ascension given the high speed at which disruptive technologies morph", R36, regulatory authority). Data privacy and cybersecurity (8), intellectual property (5), job displacement (4), and cultural erosion (3) were also raised. Recommended strategies centred on integrating AI and new technologies (15), adopting hybrid and multi-platform distribution (11), investing in local content and audience research (8), and upskilling (5).

Table 7: Joint display of quantitative and qualitative findings

Dimension	**Quantitative result**	**Qualitative theme (respondents)**	**Integration**
AI and operational efficiency	61% agree AI improved efficiency; use intensity–efficiency r_s = .46**	Efficiency, speed and cost reduction, mostly attributed to AI (13)	Converge; qualitative data add that new technology costs partly offset savings
AI and audience engagement	55% agree; adoption stage r_s = .34* (tentative)	Engagement, interactivity and personalisation (4)	Converge, weakly; AI framed as understanding audiences rather than reaching them
OTT and audience engagement	79% agree streaming eased access; OTT integration n.s.	Wider reach, accessibility, diaspora and global audiences, attributed to streaming (15)	Complement; reach is seen as sector-wide, not organisation-specific
Revenue generation	18% agree AI raised revenue; broadcasters M = 1.93; all r_s n.s.	Revenue opportunities mentioned as potential (6); monetisation of streaming recommended (4)	Converge; revenue regarded as future potential rather than current result

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue X October 2026

Barriers and policy	Cost most cited barrier (50%); regulation least (18%)	Misinformation (14); regulatory design (10); privacy and cyber risks (8)	Diverge in part; regulation not a current barrier, but its future design is a major concern

Comparison with African Studies

The findings are broadly consistent with, but extend, prior African research. As in Zimbabwean and South African newsroom studies, AI adoption is partial and concentrated in production tasks, and efficiency is the most widely recognised benefit (Munoriyarwa et al., 2023; Radebe & Msimanga, 2025; Sibanda et al., 2025). The present study adds quantitative evidence that these benefits rise with intensity of use, and shows that adoption is significantly uneven across the value chain, with content producers ahead of broadcasters and the regulator. Mugadzaweta (2025) attributed slow newsroom adoption partly to cultural resistance; in this sample, resistance to change was among the less-endorsed barriers, while implementation cost was the most endorsed, which may reflect differences between newsroom and broadcasting contexts or between employees and the senior respondents who made up a third of this sample. The weak revenue results reinforce Chiridza and Mare's (2025) finding that platform distribution has not solved the monetisation problem, and extend it from print publishers to broadcasters, who were the group least likely to report AI-driven revenue.

Implications for Zimbabwe's Broadcasting Sector

The findings carry several implications, which should be read in light of the exploratory nature of the study.

First, because efficiency benefits were associated with how intensively AI is used rather than with formal adoption, broadcasters may gain more from embedding AI in specific, routine workflows, such as editing, transcription, translation, scheduling and reporting, supported by training, than from broad statements of adoption. This is consistent with the call by respondents and by Mugadzaweta (2025) for structured AI policies and skills development.

Second, revenue gains should not be assumed to follow from either AI or OTT adoption. Broadcasters, in particular, may need deliberate monetisation strategies, such as advertising optimisation, owned platforms, archive monetisation and partnerships with telecommunications providers, to convert audience reach into income.

Third, regulators and policymakers may consider that the main concern of stakeholders is not that current regulation blocks innovation, but how future rules will address misinformation, deepfakes, data protection, intellectual property and child protection without stifling growth. Respondents repeatedly called for consultative, multi-disciplinary policy development. Implementation of the National Artificial Intelligence Strategy 2026–2030 (Government of Zimbabwe, 2026) offers an opportunity to develop sector-specific guidance for broadcasting in this way.

Finally, the strong expectation of hybrid broadcast–streaming models (71%) suggests that policy and licensing frameworks may need to accommodate organisations operating across terrestrial and online distribution simultaneously.

Limitations

Several limitations qualify the findings. First, the sample is small (n = 38) and was obtained through non-probability purposive sampling, so the results cannot be generalised statistically to the whole sector, and the statistical power to detect small and moderate associations is limited. Several non-significant associations may therefore reflect limited power rather than the absence of a relationship. Second, the sample composition is uneven: the regulatory authority accounted for 39.5% of respondents, online-only broadcasters were not represented, and some categories (content distributors, signal carriers and campus radio) had one or two respondents. Third, organisational adoption and outcomes were reported by individuals, and several respondents may belong to the same organisation, so responses are not independent organisational observations. Fourth, all

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XIII Issue X October 2026

outcome measures are self-reported perceptions rather than objective performance data such as audience metrics, revenue figures or cost records, and the outcome items were worded mainly in terms of AI, which limits the assessment of OTT-specific organisational outcomes. Fifth, the cross-sectional design does not permit causal inference; the associations reported may reflect reverse causation (for example, more efficient organisations may adopt AI more readily) or unmeasured factors such as organisation size. Sixth, several constructs were measured with single items, and the barrier and outlook items did not form reliable scales. Seventh, with multiple statistical tests, some significant results may have arisen by chance. Finally, the first author is employed by the broadcasting regulator, and regulatory staff formed the largest respondent group; although the survey was anonymous, the more favourable rating of the policy environment by regulatory respondents illustrates the potential for positional bias in a sample of this composition.

CONCLUSION

This study examined how AI adoption and OTT streaming integration are associated with perceived audience engagement, revenue generation and operational efficiency in Zimbabwe's broadcasting sector, using survey data from 38 stakeholders across the regulator, broadcasters, content producers and distribution entities.

AI adoption is at an early, uneven stage, with content producers and distributors ahead of broadcasters and the regulator. AI is perceived mainly as a source of operational efficiency, and this perception strengthens with intensity of use; its association with audience reach and understanding is weaker and tentative, and there is little evidence that it has yet increased revenue, especially for broadcasters. OTT integration is more widespread than AI adoption and is widely perceived to have expanded audience access and disrupted revenue models across the sector, but organisations' own level of OTT integration was not associated with the organisational outcomes measured. AI and OTT should therefore be treated as distinct technologies with distinct consequences.

The study contributes exploratory, technology-disaggregated evidence from across an African broadcasting value chain and shows how an integrated DOI–TAM–RBV–Digital Transformation framework can be operationalised in this setting. It suggests, in particular, that RBV's emphasis on embedded capabilities, captured here as use intensity, explains perceived efficiency gains better than adoption status alone. Future research should test these propositions with larger, stratified samples that include online broadcasters; measure OTT-specific organisational outcomes; incorporate objective audience, revenue and cost data; use organisation-level rather than individual-level units of analysis; and apply longitudinal and cross-country comparative designs across African broadcasting markets.

Declarations

Ethics Approval and Consent to Participate

The Harare Institute of Technology Research Ethics Committee approved this study. The research followed the ethical guidelines and regulations of the named committee, which governs research involving human participants in the social sciences. Thirty-eight respondents drawn from Zimbabwe's broadcasting industry, including regulatory staff, public, private and campus broadcasters, content producers, a content distributor and a signal carrier, completed an online structured questionnaire that included open-ended questions. Participation in the study was voluntary, and respondents were informed of the purpose of the research before data collection. The questionnaire did not collect names or contact details, and the confidentiality and anonymity of participants were maintained throughout the study.

Consent to Participate

Freely given, informed consent to participate in the study was obtained from all respondents before data collection. Participants were informed of the purpose, procedures, and voluntary nature of the research, and of their right to withdraw at any time without penalty, before completing the questionnaire.

Consent for Publication

Not applicable.

Data Availability Statement

The datasets generated and/or analysed during the current study are not publicly available due to the confidentiality assurances given to broadcasting industry respondents at the time of data collection. They are, however, available from the corresponding author on reasonable request.

Clinical Trial Registration

Not applicable. This study is not a clinical trial and, therefore, did not require registration in a clinical trial registry.

Competing Interests

Forget Tsododo is employed by the Broadcasting Authority of Zimbabwe (BAZ), the statutory regulator of broadcasting services in Zimbabwe, as Acting Director, Broadcast Content Monitoring and Compliance. Staff of the regulatory authority constituted 15 of the 38 survey respondents, and the study addresses matters of broadcasting regulation and policy. To limit the potential influence of this relationship, participation was voluntary and anonymous; no identifying information was collected, and individual responses cannot be linked to any participant. The study was conducted as independent academic research at the Harare Institute of Technology; it was not commissioned, funded, or reviewed by BAZ, and the views expressed are those of the authors and do not necessarily represent the views or policies of BAZ. Tendai Nyamugudza declares no competing interests.

Funding

The authors received no specific funding for this research from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' Contributions

Forget Tsododo conceived the study, conducted the research, collected and analysed the data, and drafted the manuscript. Tendai Nyamugudza supervised the research, contributed to the conceptualisation of the study, reviewed the manuscript, and provided academic guidance throughout the research process. Both authors read and approved the final manuscript.

ACKNOWLEDGEMENTS

The authors acknowledge the support of the Harare Institute of Technology and all broadcasting industry stakeholders who participated in this study.

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