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JOURNALISTS' PERCEPTION OF COMPUTING TECHNOLOGIES AND ENVIRONMENTAL COMMUNICATION IN SOUTH- SOUTH, NIGERIA

By

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Abstract

In an era characterised by rapid technological advancements and growing environmental concerns, it is crucial to understand the role of media in shaping public discourse around ecological issues. This consideration is vital not only for agricultural and economic interests but also for the well-being of communities and the progress of our shared biosphere. Observations indicate that computing technologies have transformed journalism in the digital age, offering new platforms and tools for environmental reporting. Therefore, this study aimed to explore the relationship between computing technologies and ecological communication in Nigeria's South-South region, focusing on journalists' perceptions and practices. Driven by the goal of understanding how reporters utilise technology to address environmental issues, this research addresses a significant knowledge gap in the field. The study employed the technology acceptance model (TAM) and utilised a mixed-methods approach. Survey questionnaire was administered to Edo, Delta, and Rivers States journalists, yielding quantitative data. With a population of over 500 journalists, a sample size of 190 was determined using the Cozby Precision Estimate Table, ensuring proportional representation across the three states. Findings revealed a complex interaction between technology and environmental communication. While journalists recognised technology's potential to enhance reach and accuracy, they also encountered challenges such as infrastructural limitations, gaps in digital literacy, and algorithm biases. Recommendations included capacity building, improved infrastructure, and promoting responsible technology usage to combat misinformation.

Keywords: *Computing Technologies, Digital Literacy, Environmental Communication, Journalism, Journalists' Perception*

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Introduction

Work journalism varies very much from the perspective of who is being asked. A society may form an opinion on a specific issue, a government will have an agenda to publicise, an industry will want to promote a particular image, and an individual or an organisation may want a particular decision endorsed. The role of journalism in each of these cases is different and can directly impact the type of news produced. For the past two decades, computing technologies have profoundly impacted journalism. The creation of online news has meant that journalists working with developing world communities have increased access to a global audience. Even in rural areas, it is becoming more common for journalists to access the Internet, which means access to a wealth of information. With the Internet being such an efficient way to disseminate and gather information, this global trend will likely continue. Another growing trend is that of environmental journalism. This encompasses many issues, from urban planning and endangered species to waste management and global climate change. The demand for environmental news is growing with an increasing awareness of environmental issues, both by the general public and in political and business sectors. The impact of computing technologies on the practice of journalism is palpable.

South-South Nigeria encompasses six states, namely Akwa-Ibom, Bayelsa, Cross River, Delta, Edo and Rivers; in a sense, this region is a microcosm of environmental challenges juxtaposed with economic opportunity. Abundant with natural resources and rich biodiversity, the region simultaneously grapples with the consequences of soil erosion, poor waste management, oil exploration and production. Environmental communication, therefore, plays a critical role in raising awareness, fostering public participation, and holding stakeholders accountable (Afuah & Ekechukwu, 2017). However, the effectiveness of environmental communication hinges on the journalists who translate complex environmental issues for the public sphere (Odekun, 2008).

Environmental crisis in South-South Nigeria transcends local borders. Oil spills, gas flaring, and pipeline sabotage have polluted air, water, and soil, devastating ecosystems and disrupting livelihoods reliant on fishing and agriculture. The consequences extend beyond national borders, too (Lee & Ekwebelu, 2016), impacting marine life in the Gulf of Guinea. This environmental crisis is further compounded by limited access to clean

water, flooding, and the complex interplay between environmental protection and economic dependence on the oil industry. Furthermore, the economic reliance on oil makes the region a significant contributor to Nigeria's gross domestic product (GDP), highlighting the complex interplay between environmental protection and economic development (Ite & Ite, 2018).

Environmental communication bridges scientific knowledge, policy decisions, and public understanding (Carvalho, 2007). In South-South Nigeria, effective environmental communication empowers communities to comprehend the environmental threats they face. It allows them to participate in decision-making processes concerning resource management and hold corporations and government institutions accountable (Okorodation & Nlerum, 2012). Traditionally, environmental communication in South-South Nigeria relied on mainstream media outlets such as newspapers, television, and radio broadcasts (Aderinoye-Faniran & Bamgbose, 2018). These platforms have played a crucial role in raising awareness about environmental issues, giving voice to affected communities, and fostering public discourse (Amole, 2014).

Nonetheless, the media landscape in Nigeria is rapidly changing. The rise of the internet and the proliferation of digital communication channels have opened up new avenues for environmental communication (Akinfeleye et al., 2019). Social media platforms, online news websites, and citizen journalism initiatives are increasingly shaping environmental narratives and mobilising public action (Okafor, 2012). Journalists in South-South Nigeria occupy a critical position within the environmental communication landscape. They act as intermediaries, translating complex scientific and technical information into accessible narratives for the public (Tseung & Shan, 2018). Their ability to investigate environmental issues, hold authorities accountable, and amplify the voices of affected communities is vital for fostering environmental justice (Ayorinde, 2011). The digital age has presented both opportunities and challenges for journalists in the Niger Delta. On the one hand, the rise of digital communication technologies has democratised access to information and empowered journalists to reach wider audiences (Akinfeleye et al., 2019). Social media platforms enable real-time reporting, sharing of multimedia content, and fostering interactive communication with their audience (Odekun, 2018).

Computing technologies offer many tools and platforms to enhance environmental communication practices in South-South Nigeria. Through it, complex environmental data can be transformed into compelling visuals like interactive maps, infographics, and data-driven documentaries. These tools can effectively communicate the spatial extent of environmental degradation, the impact on biodiversity, and local communities' health risks (Carvalho, 2017). Through it, digital platforms can also facilitate citizen science initiatives, allowing local communities to collect environmental data, share observations, and collaborate with journalists in documenting environmental issues. This fosters a sense of ownership and empowers communities to actively participate in environmental monitoring (Sauerman & Crowston, 1994). In the same way, it enables social media platforms to provide powerful tools for raising awareness, mobilising public support, and holding stakeholders accountable. Journalists can use these platforms to engage with audiences directly, build online communities around environmental issues, and spark social movements for environmental change (Akinfeleye et al., 2019). Computing technologies equally facilitate in-depth investigative and interpretive journalism on environmental issues. Journalists can utilise tools for data analysis, satellite imagery analysis, and document verification to uncover environmental violations and hold corporations accountable for their actions (Paras et al., 2018).

While valuable for environmental communication, journalists' use of computing technologies can have unintended environmental consequences. The production and disposal of electronic devices, particularly those with short lifespans, contribute to electronic waste, a growing global concern. Energy consumption by data centres and the vast network of servers supporting online platforms leave a significant carbon footprint. The constant need for faster, more powerful devices also fuels resource extraction and manufacturing processes with their own environmental impact. These factors highlight the importance of responsible e-waste management, energy-efficient practices, and extending the lifespan of computing devices used for environmental journalism.

Statement of the problem

Environmental crisis in South-South Nigeria demands effective communication to raise awareness, empower communities, and hold stakeholders accountable. Journalists play a pivotal role, yet their perceptions and utilisation of computing technologies within environmental

communication remain under-investigated. This knowledge gap hinders efforts to optimise the use of these technologies for environmental advocacy.

Aim and objectives

This study aimed to explore the perceptions of journalists in South-South Nigeria regarding the potential and limitations of computing technologies for environmental communication. Three specific objectives guide this exploration:

1. To assess the level of awareness and adoption of various computing technologies among journalists in the region.
2. To examine how journalists perceive the impact of these technologies on their ability to report on environmental issues.
3. To identify the challenges journalists face in integrating computing technologies into their environmental communication practices.

Research hypotheses

1. H01: There is no significant difference in the level of awareness and adoption of computing technologies among journalists across different media outlets (print, radio, television, online) in South-South Nigeria.
2. H02: Journalists do not perceive computing technologies significantly impacting their ability to report on environmental issues.
3. H03: There is no significant correlation between access to resources and training and the ability of journalists to integrate computing technologies into their environmental communication practices.

Review of relevant literature

Computing Technologies

Environmental crisis demands a global conversation, and journalists are at the forefront of facilitating this dialogue. Technology has become an indispensable tool, empowering them to go deeper, communicate more effectively, and engage broader audiences in environmental issues. Computing technologies encompass many digital tools and platforms that process, store, transmit, and manipulate information (Lee & Forde, 2023). This includes hardware like computers, tablets, and smartphones – the

physical devices through which we interact with the digital world (Mahajan et al., 2022). Computing goes beyond the tangible. It encompasses the software that drives these devices, from operating systems and web browsers to specialised applications for data analysis, multimedia creation, and online communication (Chang et al., 2021). Importantly, computing technologies involve the infrastructure that connects these devices, such as the Internet and communication networks that enable information to flow across vast distances (Skylaris et al., 2020).

The pervasiveness of computing technologies is undeniable. Moore's Law, the observation that computing power doubles approximately every two years (Moore, 1965), continues to hold, making powerful tools increasingly accessible for journalists. Mobile computing, emphasising smartphones and tablets, has become ubiquitous, offering journalists constant connectivity and the ability to report remotely (Chen et al., 2022). Cloud computing provides on-demand access to storage and processing power, allowing journalists to manage large datasets and collaborate on projects regardless of physical location (Mell & Grance, 2011). This digital infrastructure has fundamentally altered the landscape of environmental communication, empowering journalists to gather and analyse data, craft compelling narratives and facilitate citizen science and public participation.

Computing technologies provide journalists access to vast environmental information databases, including satellite imagery, pollution monitoring data, and scientific reports (Huang et al., 2021). Tools like Geographic Information Systems (GIS) allow journalists to visualise this data, creating interactive maps that reveal the spatial extent of environmental degradation and its impact on communities (Luque et al., 2020). Multimedia storytelling becomes more accessible with computing technologies. Journalists can leverage video editing software, audio recording tools, and interactive elements to create engaging narratives that capture public attention and spark an emotional connection with environmental issues (Huang et al., 2021). Data visualisation tools further enhance this process by transforming complex environmental data into explicit, impactful stories (Carvalho, 2020). Online platforms can act as hubs for citizen science initiatives, allowing communities to collect and share environmental data (Sauerman & Crowston, 1994). With its interactive nature, social media enables journalists to engage directly with audiences, foster discussions on

environmental issues, and mobilise public support for environmental movements (Akinfeleye et al., 2019).

The field of computing technologies is constantly evolving, and new tools are emerging that hold immense promise for environmental communication. Artificial intelligence (AI) has the potential to automate data analysis tasks, freeing up journalists' time for in-depth investigations and storytelling (Paras et al., 2018). Machine learning can be used to identify patterns in environmental data, leading to ground-breaking discoveries and a deeper understanding of environmental problems (Qi & Wu, 2023). Virtual Reality (VR) and Augmented Reality (AR) offer immersive experiences that can transport audiences to environmentally degraded habitats, fostering empathy and understanding of the urgency of environmental action (Huang et al., 2021).

The case of South-South Nigeria exemplifies both the vast potential and specific challenges associated with computing technologies in environmental communication. The region faces severe environmental challenges, including oil spills, gas flaring, and pollution. Journalists are vital in raising awareness about these issues (Afuah & Ekechukwu, 2017). However, limited access to technology and infrastructure, potential pressure from stakeholders involved in the oil industry, and prevalent online misinformation pose significant hurdles (Akinfeleye et al., 2019; Osagie & Ubogu, 2018).

Environmental Communication

Environmental communication, a multifaceted discipline, focuses on producing, disseminating, and interpreting information about environmental issues (Carvalho, 2007). Its core objective is to bridge the gap between scientific knowledge and public understanding, fostering informed decision-making and promoting sustainable environmental practices. The field encompasses various activities, including raising awareness, promoting public participation and empowering communities.

Environmental communication initiatives aim to educate the public about environmental challenges like climate change, deforestation, and pollution (Boykoff & Boykoff, 2004). This involves utilising various communication channels, from traditional media like newspapers and television to social media platforms and interactive online resources. Environmental

communication fosters public engagement by encouraging dialogue, debate, and collective action on environmental issues (Carvalho, 2007). This may involve public forums, citizen science initiatives, and online platforms facilitating discussion and collaboration. Effective environmental communication empowers local communities by equipping them with the knowledge and skills necessary to advocate for their rights and participate in environmental decision-making processes (Okorodation & Nlerum, 2012).

The digital revolution has fundamentally altered the landscape of environmental communication. Social media platforms offer unprecedented opportunities for interactive communication, real-time information sharing, and mobilising public support for environmental movements (Akinfeleye et al., 2019). Citizen science initiatives leverage online platforms to collect and analyse environmental data, empowering communities to contribute to scientific research (Sauerman & Crowston, 1994). However, the proliferation of information online can also create challenges, such as the spread of misinformation and "fake news" (Aderinoye-Faniran & Bamgbose, 2018). Effective environmental communication recognises the importance of cultural context. Messages must be tailored to resonate with diverse audiences' specific needs, values, and beliefs (Okorodation & Nlerum, 2012). This may involve utilising local languages, storytelling traditions, and communication channels familiar to target communities.

Journalists' Perceptions of Computing Technologies in Environmental Communication

The environmental challenges plaguing South-South Nigeria, a region grappling with oil spills, gas flaring, and pollution, demand innovative solutions. Journalists play a vital role in raising awareness and holding stakeholders accountable. However, their ability to effectively communicate these issues is increasingly intertwined with their perceptions of computing technologies. This review delves into the specific perceptions of journalists in South-South Nigeria regarding the opportunities and challenges associated with these technologies in environmental communication.

Carvalho (2007) researched on the topic "Identifying media discourses and social representations of nature: A case study of the UK floods in 2007. The study was anchored on framing theory and case study design. This study analyses a specific event (the UK floods 2007) to understand how the

media frames environmental issues. Media coverage of the UK floods in 2007 across various news outlets (print, broadcast) was the research population. Qualitative content analysis of media texts was used to identify recurring themes and frames to represent the UK floods. The study identified dominant media frames, such as "natural disaster" and "national crisis", influencing public understanding of the event's causes and consequences. The study recommended that journalists should be mindful of the frames they employ when reporting on environmental issues and consider presenting a more nuanced understanding of the factors at play. It concluded that media frames significantly shape public perception of environmental issues, highlighting the need for critical media literacy.

Okorodation & Nlerum (2012) wrote an article on "Environmental Communication for Sustainable Development in the Niger Delta, Nigeria". The study, which hinged on social learning theory, argues that effective environmental communication empowers communities in the Niger Delta by fostering knowledge sharing, promoting participation in decision-making processes, and facilitating collective action towards environmental sustainability. The authors emphasise the need for culturally appropriate communication strategies that resonate with local communities in the Niger Delta and conclude that environmental communication is crucial for achieving sustainable development in the Niger Delta by empowering communities and fostering collaboration.

Akinfeleye, Oni, and Ogbene (2019) researched Nigeria's environmental communication and social media. The work was anchored on the diffusion of innovations theory, and the study understood a critical review of existing literature on environmental communication and social media in Nigeria. Existing research on the use of social media for ecological communication in Nigeria provided for the population. The data analysis consisted of a qualitative synthesis of existing research findings. The review highlights the potential of social media for raising awareness, mobilising communities, and facilitating real-time information sharing on environmental issues in Nigeria. However, it acknowledges challenges such as limited access, digital literacy gaps, and spreading misinformation. The authors called for further research on how journalists in Nigeria utilise social media for environmental communication and suggest strategies to bridge the digital divide. The work concluded that social media offers significant

opportunities for environmental communication in Nigeria, but addressing existing limitations is crucial to maximise its effectiveness.

Tseung & Shan (2018) studied “Journalists' Perceptions of Climate Change Communication: A Case Study of Hong Kong”. The study hinged on cultivation theory, adopted a case study as research design and journalists working in Hong Kong (specific case) as its population. The study revealed that journalists in Hong Kong perceive climate change as an essential issue but may face challenges in accessing scientific data, translating complex information for the public, and navigating political pressures. The authors proposed strategies to enhance journalists' access to climate change expertise, develop training programmes on effective science communication, and promote editorial independence for environmental reporting. The study concluded that journalists' perceptions of climate change communication are crucial in shaping public understanding of the issue.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Fred Davis in 1989, is a widely used theory to explain how users adopt and integrate new technologies into their lives. TAM focuses on two core beliefs influencing a person's intention to use technology: perceived usefulness (PU) and ease of use. Perceived Usefulness (PU) refers to the degree to which a user believes a particular technology will enhance their performance and achieve their goals. It is about whether the user sees the technology as valuable and worthwhile. Perceived Ease of Use (PEU) represents the user's perception of how effortless it will be to learn and use the technology. A technology perceived as complex, confusing, or time-consuming to learn is less likely to be adopted.

TAM proposes a direct relationship between perceived usefulness, ease of use, and a user's behavioural intention to use a technology. Here is the breakdown: High PU & High PEU: If a user believes the technology is both valuable and easy to learn, they are highly likely to intend to use it regularly; Low PU & Low PEU: If a user finds the technology neither valuable nor easy to use, they are doubtful to adopt it. Variations: The model acknowledges that PU can influence behavioural intention more than PEU. Although technology seems complex, its perceived benefits might outweigh the learning curve.

While perceived usefulness and ease of use are central to TAM, the model recognises the influence of external factors on technology adoption. These can include social norms and facilitating conditions. The attitudes and expectations of a user's social circle can influence their perception of technology. If colleagues or friends use a particular technology and find it valuable, an individual is likelier to adopt it. The availability of resources and support structures can impact technology adoption. For example, access to training materials, technical support, and compatible devices can significantly facilitate a user's ability to learn and use a new technology.

TAM is a powerful tool for understanding technology adoption, but it does have limitations. The model primarily focuses on individual perceptions and may not fully capture the broader socioeconomic context. Cultural influences, organisational structures, and government policies can also significantly shape technology adoption patterns. The Technology Acceptance Model (TAM) offers valuable insights into how journalists in South-South Nigeria perceive computing technologies used for environmental communication. TAM's core constructs - perceived usefulness and ease of use - can help us understand if journalists believe these technologies enhance their ability to report on environmental issues. Additionally, TAM sheds light on external factors like social norms within the journalistic community and the availability of training and technical support, which can significantly influence technology adoption in the region. By considering both individual perceptions and the broader context, TAM helps us create strategies to promote the use of these technologies for effective environmental communication in South-South Nigeria.

Data presentation, analysis and discussion

This correlational quantitative study used a questionnaire for data gathering. It drew a sample size of 190 journalists from the undetermined number of practising journalists in south-south Nigeria, with an attrition rate of 3(5.7). Consequently, the valid questionnaire for this study on which the presentation and analysis below are based is 187/190. EVIEW version 9 software (as suggested by Kanwanye and Effiong, 2022) was used to present data, and the hypotheses were tested using chi-square.

Table 1: The level of awareness and adoption of various computing technologies among journalists in the region

Variable	Mean	Maximum	Std Dev	Skewness	Kurtosis	Jarque-Bera (Probability)
Computing technologies enhance the speed and efficiency of environmental reporting	70.86	132	48.41	0.87	-0.25	3.26 (0.19)
I believe that computing technologies are essential for accurate environmental communication	54.57	90	33.72	0.41	-0.74	1.91 (0.38)
Computing technologies help in reaching a wider audience for environmental issues	48.29	154	62.13	1.07	0.2	5.45 (0.07)
I feel confident using computing technologies for environmental reporting	44	90	32.47	0.71	-0.44	2.78 (0.25)
Computing technologies improve the quality of visuals and multimedia in environmental stories	54.14	98	31.42	0.47	-0.69	2.09 (0.35)
I think computing technologies are reliable tools for environmental data analysis	55.71	110	33.08	0.3	-0.88	1.49 (0.47)
Using computing technologies makes environmental reporting more engaging for the audience	54.29	110	23.39	0.07	-1.05	1.21 (0.55)

Source: fieldwork, 2024

The mean scores suggest varying levels of agreement with each statement, with the highest mean observed for "Computing technologies enhance the speed and efficiency of environmental reporting" and "I think computing technologies are reliable tools for environmental data analysis." Skewness and kurtosis values vary across the variables, indicating some degree of asymmetry and tail-heaviness in the distributions of responses. However, the Jarque-Bera test results, with probabilities above the typical significance level of 0.05 for most variables, suggest that the distributions may approximate normality, although there may be some deviations.

Table 2: Journalists perceived benefits and drawbacks associated with using computing technologies in environmental reporting

Variable	Mean	Maximum	Std Dev	Skewness	Kurtosis	Jarque-Bera (Probability)
Computing technologies enable real-time updates on environmental issues	49.71	99	38.18	0.29	-0.74	1.64 (0.44)
The use of computing technologies enhances the presentation of complex environmental data	37.57	88	35.52	0.51	-0.48	2.31 (0.31)
Dependence on computing technologies can lead to misinformation in environmental reporting	32.86	99	42.21	0.74	-0.22	3.12 (0.21)
Computing technologies can facilitate collaborative environmental reporting efforts	47.14	121	47.59	0.54	-0.63	2.02 (0.36)
Security risks associated with computing technologies are a concern in	31.43	110	39.5	0.79	-0.13	3.47 (0.18)

environmental reporting						
The use of computing technologies can improve the accessibility of environmental information	47.29	99	38.56	0.27	-0.76	1.71 (0.42)
Overreliance on computing technologies may reduce the quality of in-depth environmental analysis	32.43	92	36.69	0.9	-0.01	3.66 (0.16)

The mean scores indicate varying levels of agreement with each statement, with the highest mean observed for "Computing technologies enable real-time updates on environmental issues" and "The use of computing technologies can improve the accessibility of environmental information." However, the skewness and kurtosis values suggest some degree of asymmetry and tail-heaviness in the distributions of responses, which may indicate non-normality. The Jarque-Bera test results, although with varying probabilities, further suggest that the distributions may deviate from normality. Therefore, caution should be exercised when interpreting the results of any subsequent statistical analyses or modelling techniques applied to these data.

Table 3: Factors hindering journalists' effective adoption of computing technologies for environmental communication in this region

Variable	Mean	Maximum	Std Dev	Skewness	Kurtosis	Jarque-Bera (Probability)
Lack of access to advanced computing technologies	46.33	75	25.72	0.39	-0.65	2.52 (0.28)
Insufficient training in computing technologies	44.5	104	41.06	0.94	-0.37	3.82 (0.15)
High costs associated with computing technologies	47.86	132	56.84	0.57	-0.76	1.92 (0.38)

Limited internet connectivity	47.38	98	38.87	0.35	-0.56	2.23 (0.33)
Concerns about the reliability of computing technologies	46.0	121	39.55	0.02	-0.82	1.32 (0.52)
Resistance to change and traditional reporting methods	46.25	89	32.38	0.01	-0.84	1.28 (0.53)
Lack of technical support and assistance for computing technologies	47.17	105	41.5	0.22	-0.71	1.78 (0.41)

Source: fieldwork, 2024

The data presents a comprehensive overview of journalists' perceptions regarding several barriers to implementing and integrating computing technologies in environmental reporting. The mean scores indicate varying degrees of agreement among journalists regarding each barrier, with the highest mean observed for "High costs associated with computing technologies," suggesting that journalists perceive the cost as a significant obstacle to adopting computing technologies for environmental reporting. Maximum scores highlight how journalists perceive these barriers, while standard deviation values reflect the variability in perceptions across journalists. Skewness and kurtosis values indicate relatively symmetric distributions, with probabilities from the Jarque-Bera test suggesting that while there may be some deviations from normality, the distributions approximate normality. Overall, the findings underscore the perceived significance of barriers such as high costs, insufficient training, limited internet connectivity, and concerns about reliability and technical support in hindering journalists' adoption of computing technologies for environmental reporting, emphasising the need for targeted strategies to address these challenges and promote technology integration in environmental journalism.

Hypothesis testing

H01: There is no significant difference in the level of awareness and adoption of computing technologies among journalists across different media outlets (print, radio, television, online) in South-South Nigeria

Variable	Chi-Square	LH Ratio	Df	p-value	Decision
Awareness and adoption of computing technologies among journalists in South-South Nigeria	12.14	7.815	3	0.006	Reject H0

The null hypothesis (H0) is rejected because the calculated p-value associated with the chi-square test is less than the chosen significance level ($\alpha = 0.05$). With a p-value of 0.006, there is a low probability of observing such a significant chi-square value if there were no actual differences in the level of awareness and adoption of computing technologies among journalists across different media outlets. Therefore, rejecting the null hypothesis indicates a significant difference in the level of awareness and adoption of computing technologies among journalists across different media outlets in South-South Nigeria.

Hypothesis 2: Journalists do not perceive computing technologies to have a significant impact on their ability to report on environmental issues

Variable	Chi-Square	LH Ratio	Df	p-value	Decision
Perceptions of computing technologies' impact on environmental reporting among journalists	124.39	-	3	<0.001	Reject H02

The null hypothesis (H02) is rejected because the calculated p-value associated with the chi-square test is less than the chosen significance level ($\alpha = 0.05$). In this case, the p-value is stated as less than 0.001, indicating a very low probability of observing such a considerable chi-square value if there were no genuine association between the perceptions of computing technologies' impact on environmental reporting and the journalists' responses. Therefore, rejecting the null hypothesis suggests a significant

association between journalists' perceptions of computing technologies and their impact on environmental reporting. In simpler terms, journalists perceive computing technologies to impact their ability to report on environmental issues significantly.

H03: There is no significant correlation between access to resources and training and the ability of journalists to integrate computing technologies into their environmental communication practices.

Variable	Chi-Square	LH Ratio	Df	p-value	Decision
Access to resources and training and the ability of journalists to integrate computing technologies	89.02	-	3	<0.001	Reject H03

The null hypothesis (H03) is rejected because the calculated p-value associated with the chi-square test is less than the chosen significance level ($\alpha = 0.05$). This low p-value indicates a very low probability of observing such a significant chi-square value if there were no accurate correlation between access to resources and training and the ability of journalists to integrate computing technologies. Therefore, rejecting the null hypothesis suggests a significant correlation between access to resources and training and the ability of journalists to integrate computing technologies into their environmental communication practices.

Conclusion

The study provides valuable insights into the perceptions, barriers, and correlations surrounding adopting and integrating computing technologies in environmental reporting among journalists. The findings reveal that journalists overwhelmingly perceive computing technologies as impacting their ability to report environmental issues. However, various barriers hinder their effective adoption, including limited access to resources, insufficient training, high costs, and concerns about reliability. Moreover, the study identifies a significant correlation between access to resources and training and the integration of computing technologies, highlighting the importance of addressing these factors to empower journalists in leveraging technology for enhanced environmental communication. These findings underscore the need for targeted interventions, collaboration among stakeholders, and policy reforms to create an enabling environment for effectively utilising computing technologies in environmental journalism,

ultimately advancing public awareness and engagement on critical environmental issues.

Recommendations

1. Media organisations and training institutions should collaborate to develop and implement comprehensive training programmes for journalists.
2. Government bodies, media organisations, and technology providers should work together to improve infrastructure and provide subsidies or grants to offset costs.
3. Media industry associations and non-governmental organisations (NGOs) should facilitate collaboration initiatives among media organisations to share resources and best practices.
4. Technology providers and cybersecurity experts should work with media organisations to address concerns and implement robust security measures.
5. Media organisations, industry associations, and advocacy groups should advocate for diversity initiatives and provide support for journalists from underrepresented communities.

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