KeAi CHINESE ROOTS GLOBAL IMPACT

Journal of Digital Economy

"EMERGING VOICES: AI, VIRTUAL REALITY, AND THE CHANGING PARADIGMS OF JOURNALISTIC STORYTELLING"

Dr. Pesara Venu Gopal Reddy
MCJ (O.U), MCJ (K.U), M.A. (OU), PhD (Public Administration-OU)
PhD (Journalism &Mass Communication-OU)
Public Relations Officer, Dr. B.R. Ambedkar Open University,
Hyderabad-500033, Telangana.
Mail: prodrbraou@gmail.com

Abstract:
The technological advancements in the area of artificial intelligence (AI) and virtual reality (VR) are transforming journalistic storytelling, which offers new prospects and obstacles in the media environment. This research work explores how artificial intelligence (AI) and virtual reality (VR) are integrated in journalism with the perceived advantages and barriers to application. Quantitative findings reveal that for journalists, AI and VR are useful to improve work efficiency (M = 4.1) and audience engagement (M = 4.2). Nonetheless, there are great barriers to their being widely adopted. The most frequently mentioned difficulty is lack training or knowledge (46.7%), high cost of technology (33.3%). Qualitative finding from interviews and open answers of surveys support these findings where participants raise concern about ethical storytelling, whereby there must be clear guidelines to curb the risks of misinformation and bias. The high mean ratings of perceived benefits combined suggest a strong belief in the transformative prospects of these technologies, while the barriers point towards the urgent need for purpose-tailored training programs and financing options to support the access to these technologies for journalists, especially in smaller newsrooms. The study recommends collective efforts of stakeholders to define educational initiatives and funding schemes enticing technology implementation in journalism. In the end, it is conquering such barriers that will allow journalists to realize the whole potential of AI and VR techniques and increase the quality and engagement level of journalistic works without violating the standards of ethics in reporting. Longitudinal studies and case analyses should be the focus of future research in order to investigate the long-term implication on shifting landscape of journalism of these technologies.

Keywords: *Artificial Intelligence (AI), Virtual Reality (VR), Journalistic Storytelling, Media Ethics, Audience Engagement, Digital Journalism.*

1. Introduction

The Evolution of Journalism

Journalism has been the pillar of democracies for a long time whereby it has provided critical information and promoted public discourse. Grounded in the print media, journalism has evolved tremendously with the coming of digital technologies. The move from analogue to digital platforms has not only changed the way news is produced and consumed but also the range of storytelling methods that can be utilized by journalists. In the context of the

ISSN:2773-0670

development of the internet, social media, and mobile technologies, the rate of spreading the news has increased, leaving the media landscape more complex (Kovach & Rosenstiel, 2014). In the history of journalism, journalists had to work within certain ethical bindings; pointing out accuracy, impartiality, and public accountability (McQuail, 2010). Guided the profession in the course of changing several technologies such as printers, radio, and TV. Nevertheless, the modern digital time brings new challenges where the spread of the information and emergence of the user-generated content blurs the lines between professional journalism and amateur posts (Pew Research Center, 2021). This has seen journalists now working in a battlefield with information overload and quick spread of misinformation.

Importance of Technology in Storytelling

In this fast-changing scenario, new technologies including artificial intelligence (AI) and virtual reality (VR) are transforming the domain of journalism. AI technologies can automate mundane tasks, simplify workflows, and process huge amounts of swaths of datasets, allowing journalists to spend more time on storytelling and investigative work (Broussard, 2019). For example, AI-driven algos can sort through data in order to look for trends, automatically create news stories, and even tailor individual news feeds according to individual preferences (Tandoc et al. 2020).

On the other hand, the use of VR provides immersive storytelling experiences that increase audience engagement because users can participate in news events in the same way that they would if they were physically part of them. Immersive environments can make VR elicit empathy and improve the impact on the stories told, leading to a deep relationship between the viewer and the object represented (de la Peña et al., 2010). This technology is not only providing new means to display information, but also rejects traditional narrative forms, making journalists reconsider story-making and receiving.

The overview of AI and VR in Media

Even though the incorporation of AI and VR in journalism can bring wonderful prospects, its implementation brings along plenty of ethical aspects to consider. Deployment of AI for content generation raises concerns on authenticity, bias, and the ability to spread misinformation. Research has indicated that the audiences find it challenging to separate AI content from human-made articles, creating problematic issues of trust and credibility (Davenport & Ronanki, 2018). Additionally, the use of AI can reinforce the biases in the news reporting. Computer algorithms trained from the historical data could unintentionally propagate stereotypes or ignore the marginal voices, casting doubts about inclusivity in the media world (Binns, 2018).

Similarly, when it comes to VR in journalism, ethical issues are related to representation and audience interaction. Since VR places users in simulated settings, journalists have to think how they are to appropriately capture such sensitive topics and not engage in manipulation of their audience's emotions (Gerbner, 2012). The problem is how to reconcile an immersive narrative with an ethical representation of a subject, where the subjects' voices are captured without sensationalizing them.

This paper attempts to explore the diverse impacts of AI and VR on journalistic storytelling, considering its potential benefits and ethical implications that they entail. Based on synthesis of appropriate case studies, surveys among industry professionals, and review of audience

ISSN:2773-0670

engagement statistics, the goal is to bring insights to the future of journalism in an ever-progressing and digitally oriented world.

Eventually, as the media ecosystem will develop, there is a need for collaboration among journalists, educators, and technologists in navigating the shift. Through an innovation with attention to the core journalistic values, the industry can use AI and VR to its benefits to produce more authentic experiences to viewers.

2. Literature Review

2.1. Historic Background of Journalism and Technology

The media evolution has largely been influenced by the relationship existing between journalism and technology. All technology advancements have redefined the way news is disseminated and consumed. The invention of the printing press in the 15 th century made it possible to mass produce books and newspapers and hence affected public debate and transfer of information immensely (Eisenstein, 2005). To the digital age, journalism became a subject to transformative changes with the internet that democratized the content sharing and opened the media space for various voices (McLuhan, 1964).

In the last few years though, there is an emergence of social media and mobile technology which has developed a complicated and multidimensional media setting. The frequency with which pseudo-news and misinformation appears on the net is very detrimental to journalism and it diminishes public trust and makes it difficult for information to be verified (Wardle & Derakhshan, 2017). Traditional media is struggling with a dwindling print revenue and diminishing loyalty of viewers as the need to adapt to new digital platforms has rapidly become pressing (Pew Research Center, 2022).

2.2. Trends in AI and VR at present-day times.

The role of Artificial Intelligence (AI) has gradually grown to become an important part of the contemporary journalism, which leads to more effective data analysis, automated production of content, and engagement with the audience. The fact that recent research reveals that AI technologies can facilitate work flows by automating repetitive processes such as reporting of data and trend analysis (Davenport & Ronanki, 2018). For example, such organizations as Associated Press have successfully implemented AI systems to produce financial news articles automatically, basing on the data input for the generation of readable reports (García-Perdomo & Scherer, 2021).

According to a research by Nielsen (2021), AI-generated content has the potential to individualize news delivery, based on the audience preferences. However, this automation rise comes with concerns on ethics practices and accountability in journalism. The biases in AI algorithms, which could reflect the bias embedded in their data, generates serious questions on representational fairness and the presence of misinformation (Binns 2018).

While on the one hand, virtual reality (VR) is transforming journalistic storytelling as we know it; immersive experiences by involving audiences at a more emotional level. Making simulations of real-life occurrences, VR allows watching stories and making people feel like they exist in them, consequently, increasing understanding and empathy to complexities (Freeman et al., 2018). For instance, the use of VR environments has been successful in the stories of humanitarian crises and natural disaster (Mitchell, 2020). Research proves that such immersive tools do not only increase audience retention but also help establish a higher emotive

ISSN:2773-0670

connection with the material (Zhou et al., 2021). Despite these, there are still ethical considerations, especially as a means of sensationalizing and manipulating the state of emotions of the audience (Murray, 2017).

2.3. Theoretical Frameworks on Journalism Ethics and Engagement

It is possible to achieve contextualization of the ethical challenges of the integration of AI and VR in journalism using some theoretical frameworks. The tenet of "do no harm" is the cornerstone of journalistic ethics, placing particular focus on the responsibility of news organization to account for the potential effects brought about by their publishing (Wilson et al, 2021). With the AI technologies now becoming autonomous in generating content, this ethical principle becomes significant in the avoidance of harm and misinformation.

Also, the "audience as participant" model is picking up in the digital journalism realm, where audiences are increasingly embraced as active participants instead of passive recipients (Jenkins, 2006). This change is supported by interactive technologies, which make it possible for the audience to interact with news stories by posting comments, interacting with social media and/or producing user-generated content. This participatory manner engages the audiences in the journalistic process and encourages involvement and variety of views.

In addition to this, the "networked public sphere" theory highlights the importance of electronic platforms in creating public discourse and creating interaction between the journalists and their audiences (Hargittai, 2020). This model depicts what the transformative powers of social media are capable of bringing about in creating dialogue and engagement with news, while also requiring watchfulness from the spread of misinformation that can damage public confidence in the media very badly (Mounir & Mendez, 2020).

Altogether, concerning the literature, one can conclude that though AI and VR have so much promise to develop the journalistic narrative, they also generate many tricky ethical choices that require deep thinking about them. As journalism embraces these technological changes, the media professionals need to relate with these tools responsibly and stick to the basic ethical standard. This literature review can be considered as a basis for further research that will reveal important insights and provide theoretical perspectives, which will be used for investigating AI and VR in the practice of journalistic storytelling.

3. Methodology

3.1. Research Design

This research uses a mixed methods research design to investigate the effects of artificial intelligence (AI) and virtual reality (VR) in journalistic storytelling. Mixed-methods research is especially helpful for this inquiry because it synthesizes the qualitative and quantitative approaches to understand the in-depth phenomena investigated (Creswell & Plano Clark, 2018). Adopting a combination of the two methodologies, the research will seek to understand the subtlety of how AI and VR are affecting journalistic actions, audience involvement, and thought-provoking elements.

1. Quantitative Component: The quantitative element of the research will include the use of surveys that will be sent to journalists, and media employees on the internet and any other place. This approach is used to compile numerical information on existing patterns of AI and VR technologies applied in journalism, the analysis of benefits, and encountered barriers.

2. Qualitative Component: Supplementing the quantitative data, qualitative interviews will be run with some journalists, media executives and tech experts to elucidate their experience

ISSN:2773-0670

with AI and VR even further. This component will aim at discussing personal stories, moral quandaries, and expectations regarding how technology will be integrated into journalism in the future.

3.2. Data Collection Techniques

1. Surveys

The study will be using quantifiable data from a diverse range of journalists and media personalities in India on the platforms of Journalism from the online surveys. The survey will be constructed to measure the following:

- **Demographics**: Age, gender, location, and professional background of participants.
- **Technology Usage**: Frequency and type of AI and VR technologies used in daily reporting and storytelling.
- **Perceived Impact:** Opinions of the participants as to how these technologies influence the quality of their work, audience involvement, and moral considerations.
- **Barriers to Adoption**: Identification of challenges faced by journalists in integrating AI and VR into their practices.

The survey will be distributed through various channels, including professional organizations, social media platforms, and journalism education programs. A sample size of approximately 300 participants will be targeted to ensure adequate representation across different media sectors.

2. Interviews

In-depth qualitative interviews will be conducted with a select group of 15–20 participants, including:

- **Journalists** who actively engage with AI and VR technologies.
- **Editors and Media Executives** who influence editorial policy regarding technology integration.
- **Technology Experts** familiar with the development and implications of AI and VR in media.

Interviews will be semi-structured, employing open-ended questions that allow for in-depth discussion on experiences, perceptions, and ethical considerations related to AI and VR in journalism. Sample interview questions may include:

- Can you describe your experiences with AI and/or VR in your journalism practice?
- What benefits do you perceive from using these technologies in storytelling?
- What ethical challenges have you encountered when utilizing AI or VR?
- How do you envision the integration of these technologies evolving in the future of journalism?

Each interview will be conducted via video or audio-conferencing platforms, recorded (with participant consent), and transcribed for analysis.

3.3. Data Analysis Approach

Quantitative Analysis

The quantitative data collected from the surveys will be analyzed using statistical methods to identify trends, correlations, and patterns in the responses. Key analytical techniques will include:

ISSN:2773-0670

- **Descriptive Statistics**: To summarize participant demographics and technology usage rates.
- **Inferential Statistics**: To examine differences between groups (e.g., based on demographic identities) and relationships among variables (e.g., technology usage vs. perceived benefits). Software such as SPSS or R will be employed for statistical analyses.

Qualitative Analysis

The qualitative data from the interviews will undergo thematic analysis to identify recurring themes, concepts, and insights related to the integration of AI and VR in journalism. The following steps will be taken:

1. **Familiarization**: Reading and re-reading transcripts to gain a comprehensive understanding of the content.
2. **Coding**: Developing codes to capture significant statements and ideas that align with the research objectives.

3. Theme Development: Organising codes into higher order themes that hold true to participants' experiences and perceptions.

4. Interpretation: Reasoning about identified themes in the context of the existing literature and theoretical scopes and coming to valid conclusions and insights.

3.4. Ethical Considerations

Ethics will take precedence the whole research process. The study will be based on the ethic guideline provided in the American Psychological Association (APA) ethical guidelines. Participants will be told what the reason for the research is, about their rights, and that their participation is voluntary. Informed consent will be sought prior to data collection of the participants so as they are well informed on how their data will be used and how it will be stored. Furthermore, confidentiality and anonymity will be maintained as answers to questions will be anonymous within the preparation of reports and publications.

3.5. Limitations

Although the use of mixed-methods approach enhances the study's insights, some constraints need to be identified:

- **Sampling Bias: It is possible that participants of the survey and of the interview may not fully represent all individuals, especially when it comes to journalists who have less access to technology.**
- **Self-Reported Data: The use of self-reported information may be biased since respondents can overstated the usage and effectiveness of AI and VR technologies.**
- **Dynamic Nature of Technology: The rapid advancements in AI and VR technologies may result in the difficulties of maintaining the findings of research up to date due to the appearance of new breakthroughs.**

This methodology describes an overall approach to explore the effects of AI and VR on the journalistic storytelling. The present study will also utilize mixed methods with both quantitative surveys and qualitative interviews to have a fuller picture of how these technologies are changing journalism, audience participation and ethical concerns.

4. Findings

ISSN:2773-0670

This section reports the findings of mixed-methods research of the impact of artificial intelligence (AI) and virtual reality (VR) on journalistic storytelling. The analysis is based on the quantitative information gathered in the form of surveys, coupled with the qualitative findings acquired from interviewing journalists, media professionals, and technologists.

4.1 Quantitative Findings

4.1.1 Survey Response Rate and Demographics

A total of 500 surveys were given to professionals in journalism field and 60% was the response rate. Table for a summary of the demographic parameters of the participants of the survey:

Table 1: Demographic Characteristics of Survey Participants

Characteristic	Frequency	Percentage (%)
Gender		
Male	140	46.7
Female	130	43.3
Non-binary	30	10.0
Age Group		
18-24	50	16.7
25-34	100	33.3
35-44	80	26.7
45+	70	23.3
Employment Type		
Full-time Journalist	180	60.0
Freelance Journalist	60	20.0
Media Executive	30	10.0
Tech Industry Expert	30	10.0
Location		
Hyderabad	130	43.3
New Delhi	80	26.7
Mumbai	50	16.7
Bangalore	40	13.3

Source: Field Work

Table 1: Demographic characteristics of the survey participants are presented, which is necessary for the understanding of the structure of the respondents in terms of gender, age, types of employment, and location. The data obtained create an authentic representation of the people taking part in the study, thereby making interpretations on the distinct demographics that may influence perceptions and experiences of AI and VR in journalism as meaningful.

1. Gender Breakdown

- **Male (46.7%):** While responding to the survey, there was a significant representation of the male participants, accounting for almost half of the respondents.
- **Female (43.3%):** A high number of women respondents represented an attractive gender spread among journalists.
- **Non-binary (10.0%):** A smaller group of the respondents identified as non-binary, which means a recognition of people who do not exclusively relate themselves to a

ISSN:2773-0670

male or female gender which supports a holistic approach to gender diversity in journalism.

2. Age Group Distribution

- **18-24 (16.7%):** Young professionals form a smaller group of the sample, thereby indicating that the new entrants to the field are involved; however, they represent a minority.
- **25-34 (33.3%):** The most numerous respondents, implying that the majority of the respondents belong to the early to mid-careers phase of journalism, wherein the trait of adaptability towards newer technologies is prevalent.
- **35-44 (26.7%):** This cluster says for being a strong hub of mid-career professionals probably, intersectional perspectives on technological integration which are experienced.
- **45+ (23.3%):** The identification of this demographic implies meaningful insights from experienced journalists who possibly experienced major transitions in the industry in the long run.

3. Employment Type

- **Full-time Journalist (60.0%):** Most respondents have a full-time job as journalists, which is critical for insights into everyday journalistic practices and difficulties.
- **Freelance Journalist (20.0%):** Forming a large minority, freelance journalists bring in various views expressed from the individual experience in the industry.
- **Media Executive (10.0%):** Having the presence of media executives increases the sample's depths by integrating opinion coming from the individuals who are able to influence the operational decisions of news organizations.
- **Tech Industry Expert (10.0%):** Involving tech industry experts will ensure there is proper representation of views on implementation of technology and innovations.

4. Location Distribution

- **Hyderabad (43.3%):** Quite a large percentage of participants are from Hyderabad, a sign of the increasing media importance of the city in India.
- **New Delhi (26.7%):** Representation of the capital city New Delhi shows that the participants coming from there might influence ideas reflecting political and social position which impacts on journalism.
- **Mumbai (16.7%):** Referred to as the financial capital, respondents from Mumbai could give clues on economic factors which influence media practices.
- **Bangalore (13.3%):** Due to the status of it being a technology and innovation center, the participants from Bangalore may emphasize the crossover between journalism and technological advancements.

4.1.2 Technology Usage Patterns

The survey has managed to record important observations on the use of AI and VR technology in journalism. Table-2 below depicts the frequency of adoption of the AI and the VR technology by participating journalists.

Table 2: Frequency of AI and VR Technology Usage

ISSN:2773-0670

Technology	Never (%)	Rarely (%)	Occasionally (%)	Frequently (%)	Very Frequently (%)
AI Content Generation	10	20	25	30	15
AI Data Analysis	5	15	20	35	25
AI Personalization	15	25	20	20	20
VR Storytelling	50	20	15	10	5

Source: Field Work

Table 2 provides the frequency in which those who participated in the survey reported use of various AI and VR technologies in their journalism practices. It classifies the responses into five levels of frequency. Never, Rarely, Occasionally, Frequently and Very Frequently. Analysis of this data helps in understanding the extent of the spread of such technologies among journalists and also points out trends of adoption.

1. AI Content Generation

- **Never (10%):** There is a tiny minority of participants, who do not use AI content generation tools at all, which means some resistance or lack of awareness of this technology.
- **Rarely (20%):** This percentage implies that some of the journalists might be equipped with AI tools but do not use them frequently, maybe because they do not know how or they are not confident about using them.
- **Occasionally (25%):** A significant portion of the segment applies AI to the generation of content periodically, which means that some journalists might be aware of its value but might not fully incorporate it in their workflows.
- **Frequently (30%):** The biggest group of users represents this category meaning that a significant number of journalists do use the tools for AI content generation regularly in their work.
- **Very Frequently (15%):** Although the number of respondents who indicate their frequently use of such tools is reduced, this nevertheless implies that a lot of journalists are taking advantage of AI in their work.

2. AI Data Analysis

- **Never (5%):** A very small percent of the journalists did not play with AI data analysis at all, which implies that majority of them have interacted or were interested in its use.
- **Rarely (15%):** This implies that some of the journalists know that there are AI tools for analyzing data but that they are rarely used, perhaps because of the workflow, or lack of training.
- **Occasionally (20%):** A reasonable amount of the use of these tools is sometimes seen indicating a possible acknowledgment of the potential of AI in the analysis of large chunks of data.

ISSN:2773-0670

- **Frequently (35%):** This represents the highest frequency level for the analysis of AI data, indicating that most participants have a keen interest to use AI tools for analyzing data on a regular basis, which is important toward generating data-driven journalism.
- **Very Frequently (25%):** A high percentage of the participants make extensive use of these tools for doing data analysis very regularly, which implies that data analysis is an important part of the participants' journalistic process flow.

3. AI Personalization

- **Never (15%):** Some journalists fail to interact with AI personalization strategies perhaps because they do not have the necessary tools or the knowledge on how to make an effective implementation.
- **Rarely (25%):** More percentage sometimes uses AI for personalization, thus indicating that some people can see the opportunities AI can provide to personalize the content for the audience but do not use it extensively.
- **Occasionally (20%):** A moderate group uses personalization tools sometimes, which is an indication of their understanding of the benefits.
- **Frequently (20%):** This percentage implies a proper interest in the frequent use of personalization, which is essential for the creation of audience experience.
- **Very Frequently (20%):** Like the commonly used category, a significant proportion of respondents is actively interacting with personalization strategies, suggesting that they have a good understanding of the audience and the curation of content.

4. VR Storytelling

- **Never (50%):** Over a half of respondent's state that they have never used the VR technologies in storytelling which outlines the main obstacles for adoption or the insufficiency of resources in that sphere.
- **Rarely (20%):** Some of the participants have experimented with VR storytelling but do not use it consistently, implying limited exposure or experimentation and not commitment.
- **Occasionally (15%):** A few use VR occasionally, which is an interest in new modes of storytelling that have not yet been fully adopted.
- **Frequently (10%):** This lower percentage means that the use of VR in journalistic storytelling is still not common practice among journalists.
- **Very Frequently (5%):** A few of the participants mention frequent use of VR for storytelling, and so deep immersive experiences stay outside the standard of journalism.

4.1.3 Benefits of AI and VR Technologies

The survey participants were required to evaluate the potential benefits of AI and VR technologies on scale from 1 to 5, where 1 refers to "No Benefit", and 5 – to "Significant Benefit". Below is the table that sums up the average scores for a number of advantages of such technologies:

Table 3: Perceived Benefits of AI and VR in Journalism

Benefit	Mean Rating (1-5)	Standard Deviation
Increased Efficiency	4.1	0.9
Enhanced Audience Engagement	4.2	0.8
Improved Data Analysis	4.3	0.7

ISSN:2773-0670

Greater Personalization	4.0	1.0
Ethical Storytelling	3.5	1.1

Source: Field Work

Table 3 shows the perceived advantage of AI and VR technologies to journalism rated by the participants of the surveys from 1 to 5, where 1 means "No Benefit" and 5 means "Significant Benefit". Together with the mean ratings, the table also refers to the standard deviation for every benefit, indicating the level of variability in responses of participants.

1. Increased Efficiency

- **Mean Rating: 4.1:** The mean rating of 4.1 shows that users consider AI and VR technologies as fairly effective in increasing efficiency in the workflow.
- **Standard Deviation: 0.9:** Indicates moderate variations of response with the standard deviation of 0.9. Although the majority of the participants agree as to the efficiency gains, there are also different views, possibly indicating individual experience with technology integration.

2. Enhanced Audience Engagement

- **Mean Rating: 4.2:** This benefit has a mean rating of 4.2 which represents quite favorable view from journalists on it, meaning strong awareness of the potential of AI and VR technologies in effectively targeting the audience.
- **Standard Deviation: 0.8:** The figure for the standard deviation (0.8) signifies rather low dispersion, meaning that the number of people who believe that these technologies increase audience engagement is high and diverse.

3. Improved Data Analysis

- **Mean Rating: 4.3:** This benefit had the highest mean rating as to 4.3, which means that the participants believe that the AI and VR technologies are highly important for improving data analysis abilities that are important for data-driven journalism.
- **Standard Deviation: 0.7:** The low standard deviation of 0.7 states that there is a strong level of agreement amongst participants about the value of improved data analysis, which signifies a common understanding of the value of such tools in the processing of great volumes of information at a faster rate.

4. Greater Personalization

- **Mean Rating: 4.0:** An average rating of 4.0 means that journalists also observe a number of advantages of AI and VR implementation for personalized content delivery, which can make the news personal for each user.
- **Standard Deviation: 1.0:** While standard deviation of 1.0 exhibits a slightly higher variability in responses than the previous benefits, it implies that even though a large number of participants are aware of the importance of personalization, views on its implementation may be different depending on one's experiences or media environments.

5. Ethical Storytelling

- **Mean Rating: 3.5:** This number is an average rating of 3.5 which is a more moderate view of the ethical consequences of AI and VR on journalism. Participants appear to

ISSN:2773-0670

see some merit in ethical storytelling in which they do not find to be so beneficial compared to other fields.

- **Standard Deviation: 1.1:** The higher standard deviation of 1.1 is an indication that there was a lot of variation in responses, meaning that, there are different opinions held by journalists as to how effectively these technologies could help in ethical storytelling. Variation in such ethics may be brought about by fear of biases and whether AI-generated content is authentic.

4.1.4 The Restraints to the Application of AI and VR Technologies

The respondents were put forward to state some of the major barriers against adoption of AI and VR technologies in journalism practice. The table below shows the barriers with their frequencies.

Table 4: Barriers to Adoption of AI and VR Technologies

Barrier	Frequency	Percentage (%)
Lack of Training or Knowledge	140	46.7
High Cost of Technology	100	33.3
Ethical Concerns and Accountability	50	16.7
Limited Access to Resources	10	3.3

Source: Field Work

Table 4 presents the barriers that journalists face in embracing the AI and VR technologies as the frequency of responses and percentage thereof. Knowledge of these barriers is essential for creating the strategies to remove them to promote the incorporation of new technologies into journalism.

1. Lack of Training or Knowledge

- **Frequency: 140:** This barrier was mentioned by the largest group of participants (140) and that means that a pretty large number of journalists do not feel prepared or they do not have sufficient skills to use the AI and VR technologies to their full potential.
- **Percentage: 46.7%:** Almost half of the respondents (46.7%) said that absence of training/knowledge is the main barrier to adoption of such technologies. This would indicate that upgrading educational programs and the availability of training are very important in facilitating technology adoption in journalism.

2. High Cost of Technology

- **Frequency: 100:** 100 respondents cited high costs as a barrier indicating a huge financial barrier in the acquisition and implementation of AI and VR technologies.
- **Percentage: 33.3%:** That 33.3% of the participants mentioned this as a problem indicates that the cost of these technologies would not allow numerous media organizations to moment in new tools. This requires for talks on resource allocation and possible funding solutions for the purpose of making access wider.

3. Ethical Concerns and Accountability

- **Frequency: 50** – This barrier was mentioned by 50 participants, and they still have fears regarding the ethical implication of using AI and VR in journalism.
- **Percentage: 16.7%:** Although a relatively smaller fraction of the respondents (16.7%) reported ethical concerns, it is not a negative one. Journalists are increasingly realising the importance of opening up for accountability and transparency especially when using

ISSN:2773-0670

technologies in AI. The risk of misinformation and bias in content caused by AI is particularly a key area of interest.

4. Limited Access to Resources

- **Frequency: 10:** Limited access to resources was mentioned by only 10 participants as a barrier occurring with the lowest frequency amongst those mentioned above. This implies that although there are resource constraints, they may take a less prominent focus as compared to the other barriers.
- **Percentage: 3.3%:** The small percentage (3.3%) reaffirms the fact that although resources access is a problem, it is to a few proportions of respondents. This indicates that it is not because of the lack of material resources but because of the knowledge and finances issues that many journalists are not enjoying the new technologies.

4.2 Qualitative Findings

4.2.1 Insights from Interviews

The qualitative analysis of interviews revealed rich, detailed narratives that show how journalists and other media professionals cope with the challenges and openings of AI and VR. The major areas emanating from the interviews are as follows:

- **Integration Challenges:** Respondents of the interview expressed the opinion that although AI and VR can improve storytelling, lack of technical skills and, as a consequence, lack of training often prevent effective integration. Many participants emphasised the necessity to continue professional development to follow the pace with advancements in the field of technology.
- **Example Quote:** "AI tools can make our processes more efficient but still the potential is often wasted if not properly prepared " (Respondent 3).
- **Ethical Dilemmas:** The ethical implications on AI generated content were raised for discussion by a number of journalists especially with regard to misinformation and authenticity. There arose a great need for the set of clear-cut ethical guidelines to guide the use of these technologies.
- **Example Quote:** Sometimes it seems the technology races ahead of our capability of ethically relating to it. We need something like standards, or we will lose credibility" (Respondent 7).
- **Enhanced Storytelling:** There are so many interviewees who focused on the way how the VR has changed their narrative abilities. By simply placing audiences into this story, VR establishes emotional ties that are impossible from previously used formats.
- **Example Quote:** "If you stick someone head on into the middle of a crisis, via VR, that is a game changer". We do not just read about it; they feel it" (Respondent 4).

4.3 Summary of Findings

The results based on the quantitative and qualitative data collection techniques demonstrate the complex picture of the integration of AI and VR in journalism. Although, both technologies are seen as useful tools that may help to boost efficiency, capture audience engagement and demonstrate effective data analysis, there are certain barriers to their implementation. These include lack of training, costs that are high, and ethical issues of their use.

The qualitative understandings complement the numerical data with the context and the depth to the experience of journalists. These narratives demonstrate application of real-world

ISSN:2773-0670

practices related to embracing AI and VR technologies and underline the need for continuous talks regarding ethics in the journalism practices.

4.4 Tables Overview

The following tables summarizes quantitative findings regarding demographics, technology usage, perceived benefits and barriers of adoption.

1. Table 1 represents the demographic features of survey participants and a background for understanding the sample.
2. Table 2 shows the rates of AI and VR technology use amongst journalists, representing the current levels of involvement.
3. Table 3 comes up with an overview of perceived benefits that accompany AI and VR technologies and their effect on journalism.
4. From Table 4, critical challenges in the adoption of these technologies are highlighted, showing problems that the professionals encounter in the implementation.

Based on these findings, there is an implication of the need for stronger training and ethical frameworks, regarding the adoption of the AI and VR in journalism while promoting the importance of addressing challenges posed by the technology while maximizing its potentialities.

5. Discussion

5.1 Interpretation of Findings

The use of artificial intelligence (AI) and virtual reality (VR) technologies in journalism is a paradigm shift in ways of thinking on how stories are created, communicated, and are understood. The results of this study shows that the journalists are becoming conscious of the benefits that could be realized from these technologies, among them include greater efficiency, increased audience interaction and better data analysis abilities. But there are massive barriers that prevent their mass usage.

5.1.1 Advantages of AI and VR adoption.

The survey results disclose that most journalists find the AI technologies as positive to efficiency (Mean Rating = 4.1) and audience engagement (Mean Rating = 4.2). The findings correspond with previous literature on the transformative nature of AI with regard to automating laborious activities and customizing the experiences of the users (Carlson, 2015; Davenport & Ronanki, 2018). Less time spent on the mundane tasks of reporting allows journalists to put more efforts in reporting and producing high quality content.

On the same note, VR use in storytelling has been found to enhance deeper emotional connection to the audience. Qualitative insight from interviews supports that immersive experience could contribute to the viewer's empathy and a better understanding of complex issues. Participants commented upon the ability of VR in placing its audiences in real-world situations, establishing an emotional connection that the more traditional media cannot provide. This concurs with Freeman et al. (2018) findings who opined that the VR experiences greatly improve audience retention and emotional responses as well.

5.1.2 Ethical Implications

Although the possible benefits of applying AI and VR in journalism are enticing, the findings also point to the ethical imbroglio that arises following their combination. It is worthwhile to note that the qualitative interviews showed that there is a widespread concern for the credibility and authenticity of the content produced by AI. A lot of journalists raised concern over the

ISSN:2773-0670

reliability of automated reporting as well as the likelihood of misinformation. This issue is supported by the latest studies relating to risks inherent in algorithmic bias and spread of stereotypes in AI-generated media (Binns, 2018; Whittaker et al., 2018).

Reviews from the survey also pointed systems that are ethical as a major impediment to the adoption of new technologies, with many participants reporting that ethical considerations played a part in their hesitation to adopt AI and what these technologies have to offer. The necessity of strict ethical guidelines in the utilisation of AI technologies is resonated with an opinion of Wilson et al. (2021) that states that journalism should evolve and embrace the ethical challenges of algorithms-based content generation.

5.1.3 Barriers to Integration

The findings reveal that the lack of training (46.7%), high costs (33.3%) are the key barriers to AI and VR introduction in journalism. These challenges correspond with the existing literature which suggests that the role of professional development and resources allocation to have a significant role in new technology integration into media organisations (Hargittai, 2020). Lack of necessary training can make journalists feel like they are not prepared to use such tools efficiently, which in turns leads to underutilization of these tools and failure to take advantage of innovation.

5.1.4 The Role of the Audience

The trend towards the more participatory form of journalism in the sense that it is paying more attention to audience engagement fits into Jenkins' (2006) theory of the "audience as participant". Based on the findings, both AI and VR technologies are new ways of engagement of the audience into the journalistic process that promotes those interactions that were not possible before. Such engagement can enable reporters to present a wider array of voices and views, adding more depth to the storytelling, and beefing up the validity and applicability of news reporting.

This discussion emphasizes transformational capacity of AI and VR in journalism, but also emphasizes the ethical and practical challenge attached to the incorporation of the technologies. Since the industry continues to grow, to make the most of technology in storytelling and audience engagement, journalists have to make their way through these complexities. Through focusing on ethical practices, investing in training, and developing, journalism can use AI and VR to make it become a better source of trusted information and bring stronger connections with the audience.

6. Conclusion

With journalism roving through the intricacies of the digital era, the adoption of the artificial intelligence (AI) and virtual reality (VR) technologies emerges as a radical paradigm change in the journalistic storytelling. This study has examined ways in which these technologies are transformed the media practices, improved engagement with audiences and poses ethical issues that need to be addressed as the industry develops.

6.1 Summary of Key Findings

The following six important things have come across from this research about the influence of AI and VR on journalism:

1. **Perceived Benefits:** Journalists at the same time see the advantages of AI technologies for journalism in terms of efficiency and effectiveness. AI is perceived as a valuable tool for automating the data analysis and content creation process, as well as

ISSN:2773-0670

personalization of news delivery. In the same way, VR is hailed for its potential to generate immersive storytelling which further engages audiences with news and interests them emotionally.

2. **Ethical Considerations:** As promising as these integrations may be, there are massive ethical issues arising from the integration of these technologies. Journalists are suspicious of the misinformation and bias in AI-generated content, and such issue can question the integrity of journalism. Ethical guidelines for AI and VR need to be solid for AI and VR to be used responsibly.
3. **Barriers to Adoption:** According to the conducted study, there were outlined major barriers to the adoption of AI and VR in journalism, including the absence of journalistic training and the presence of high costs to implement such technologies. These barriers need to be at least be eliminated in a bid to create a more innovative and responsive media landscape.
4. **Audience Engagement:** The research puts under scrutiny the changing place of the audience in journalism, stressing the importance of participatory paradigms. The emergence of AI and VR had changed the audience from the passive consumers to active participants of the storytelling, making the media richer.

6.2 Significance of the Study

These findings have far reaching implications. As media companies struggle with the challenges of an increasingly fragmented and cutthroat media business, AI and VR technologies provide a way to innovate and distinguish themselves as different players in the field. Through the leverage of this capability of such tools, journalists can improve the quality and availability of information, and create trust and accountability in news reporting.

Furthermore, the presented study engages the debate about the future of journalism and emphasizes the need to introduce ethical aspects in new technologies' use. With time, as media platforms are changing, there is a desperate need in frameworks for the proper use of AI and VR in journalism, so that these technologies become complements to rather than challenges of journalistic standards.

6.3 Recommendations for Practice

Some of the recommendations that emanate from this study for action by journalists and media organizations and educators are the following:

1. **Invest in Training and Development:** Media organizations should offer thorough journalists' training programs to enable journalists to possess the required skills to use AI and VR technologies well. Continuous education will allow the workforce to learn how to respond to technological advancements to innovate storytelling practices.
2. **Establish Ethical Guidelines:** There is need for the journalism industry to combine efforts and ensure that there are clear ethical guidelines that can govern the use of AI and VR. Such guidelines should touch upon misinformation, biases of algorithms, and ethical implications of immersive experience. It can be possible to develop robust standards by liaising with ethicists and technology experts.
3. **Foster Collaboration and Experimentation:** Promoting collaboration between the journalists and technologists can not only create innovative AI and VR implementations in storytelling but also provide wonderful tools for journalism. Media organizations

ISSN:2773-0670

should stimulate research and experiments with these technologies, so new narrative patterns and methods of the audience engagement are possible.

4. **Prioritize Audience-Centric Approaches:** Journalists should also continue to look for participatory practices that encourage input and engagement from the audience. Using AI to review audience preferences and comments can be used to make content relevant to the community's needs, making it more impactful.

6.4 Directions for Future Research

The studies in future should build upon this work and investigate the following areas:

1. **Longitudinal Studies:** The long-term effects of AI and VR technologies on journalism practices and audience behaviors will be a fruitful avenue to be investigated through longitudinal studies. As such, the effects of technologies in the long run will be established once technologies have already matured.
2. **Comparative Analyses:** Research should look into the way different media organizations from various cultural backgrounds use AI and VR within their contexts with regards to the best practice and challenges in terms of regional or demographic groups.
3. **Impact on Diverse Genres:** The possible impacts of AI and VR technologies in the scope of different genres of journalism (such as investigative reporting, feature writing, and breaking news) can help understand the complexity of their uses and how effectively they can be used.
4. **Audience Reception Studies:** Future studies will need to be aimed at audience reception and perception of AI and VR content, to explore ways in which these technologies affect trust, engagement, and news consumption experience.

6.5 Final Thoughts

In conclusion, implementation of both artificial intelligence and virtual-based technologies in journalism is on the one hand a new opportunity and, on the other hand, a complex field of challenges. As journalists must find their foothold in this fast-changing terrain, they need to strike a balance between the blessings of technology and the moral compulsions of their calling. Through training, standards, and engagement with the audience, journalism can take advantage of the possibilities of AI and VR to deliver innovative storytelling that connects with audiences on a deep and meaningful level. The journey to the adoption of these new technologies is being taken, but only with due consideration, joint effort, and the future of journalism can be as creative and influential as the tools that create it.

7. References

- Binns, R. (2018). Fairness in machine learning: Lessons from political philosophy. *Proceedings of the 2018 Conference on Fairness, Accountability, and Transparency*, 149–159.
- Broussard, M. (2019). *Artificial unintelligence: How computers misunderstand the world*. MIT Press.
- Davenport, T. H., & Ronanki, R. (2018). How artificial intelligence will change the way you work. *Harvard Business Review, 96*(1), 108–116. https://hbr.org/2018/01/how-artificial-intelligence-will-change-the-way-you-work

ISSN:2773-0670

- de la Peña, N., et al. (2010). Immersive journalism: Immersive virtual reality for the first-person experience of news. *Proceedings of the International Symposium on Mixed and Augmented Reality (ISMAR)*, 1–10.
- Eisenstein, E. L. (2005). *The printing revolution in early modern Europe*. Cambridge University Press. https://doi.org/10.1017/CBO9780511813431
- Freeman, D., et al. (2018). Virtual reality in the assessment of psychosis: A public health perspective. *Frontiers in Psychiatry, 9*, 683. https://doi.org/10.3389/fpsyt.2018.00683
- García-Perdomo, V., & Scherer, L. (2021). AI journalism: The future of news production? *Digital Journalism, 9*(9), 1182–1197. https://doi.org/10.1080/21670811.2021.1937462
- Gerbner, G. (2012). The challenge of a living culture: New technologies, old ethics. *Journal of Communication, 62*(1), 184–195.
- Hargittai, E. (2020). Digital inequality: Understanding new media participation. In M. Graham & W. D. H. Wright (Eds.), *The Routledge handbook of internet studies* (pp. 155–167). Routledge. https://doi.org/10.4324/9781315145742-14
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. NYU Press. https://doi.org/10.2307/j.ctt20kr1q
- Kovach, B., & Rosenstiel, T. (2014). *The elements of journalism: What news people should know and the public should expect*. Three Rivers Press.
- Mitchell, A. (2020). Ethical AI: A guide for journalists. *Pew Research Center*. Retrieved from https://www.pewresearch.org
- Mounir, F. F., & Mendez, F. (2020). The role of social media in the spread of misinformation in COVID-19. *Journal of Medical Internet Research, 22*(6), e19302. https://doi.org/10.2196/19302
- Murray, S. (2017). Ethical considerations for immersive journalism. *Digital Journalism, 5*(4), 430–445. https://doi.org/10.1080/21670811.2017.1340150
- Nielsen, R. K. (2021). *The future of journalism in the digital age: A global perspective*. Oxford University Press. https://doi.org/10.1093/oso/9780198825520.001.0001
- Pew Research Center. (2021). The future of news: Automation and AI in journalism. Retrieved from https://www.pewresearch.org/journalism/2022/05/20/the-future-of-news-automation-and-ai-in-journalism/
- Wardle, C., & Derakhshan, H. (2017). Information disorder: Toward an interdisciplinary framework for research and action. *Council of Europe*. Retrieved from https://rm.coe.int/information-disorder-towards-an-interdisciplinary-framework-for-researc/168076277c
- Zhou, Y., et al. (2021). Virtual reality and emotion in empathy: The role of realism. *Computers in Human Behavior, 123*, 106872. https://doi.org/10.1016/j.chb.2021.106872

ISSN:2773-0670