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Using Artificial Intelligence in the Al Jazeera Newsroom to Combat Fake News

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Abstract

Information manipulation and false content has been perceived and defined differently over time. In the Arab media context, fake news is not a new dilemma, and is more likely to be used as an instrument of content control, influence and public opinion manipulation. This is related to the issue of news dis/misinformation. Audience trust and credibility in Arab media outlets – especially government-owned – is at an all-time low (under 20 percent in various countries). Controlling fake news is becoming a primary concern for the Arab media industry. Source verification and managing organisational resources is an acute dilemma. Using Artificial Intelligence (AI), machine learning and NLP to automate the process of identifying fake news is looked upon as the cornerstone to separate the 'truth' from 'fake' in the news field. This study aims at assessing the efforts of the Al Jazeera network in controlling fake news in its newsrooms. The study is based on qualitative structured and semi-structured interviews with Al Jazeera newsroom teams and artificial intelligence technology developers. The results showed a variety of efforts being conducted by various Al Jazeera teams to control fake content and prevent Al Jazeera content from being misused. They also showed the importance of the role of artificial intelligence, especially anticipation technologies, in detecting fake sources and managing newsroom operation.

Keywords

fake news; artificial intelligence; Al Jazeera; newsroom studies; anticipation.

Index

Introduction

7

11

Theoretical Background

Methodology

24

39

Conclusion

**References and
Appendices**

45

Introduction

Every minute over 120,000 information items are shared over news platforms – especially social media – 60 percent of which are fake. About two-thirds of the audience in the Americas and half of the audience in Europe experience disinformation on a daily basis. From information influenced by marketers trying to link citizens to politicians and interest groups trying to manipulate public opinion (Ong and Cabañes 2018), fake news has demonstrated an extensive influence on society, affecting financial markets and public opinion of climate change, and disrupting responses to terrorist attacks and natural disasters (Brigida & Pratt, 2017; Starbird et al., 2014). People have never experienced so much dis/misinformation and so many conflicting opinions from so many angles (Benkler et al. 2017).

In today's liquid society, more people are getting their news instantly from online news websites, social media platforms, blogs, and forums, among others. These communication tools – especially social media – have become a hotbed of fake news, with fake information being manufactured and distributed in large volumes, usually from untraceable IP

addresses (Shae and Tsai 2019). Social media platforms represent near-perfect news propagation channels to anyone who can attract followers. The generation of hotpots have helped in spreading fake news and flooding cyberspace with it (Dice 2017; Shae and Tsai 2019). This is mainly because fake news spreads faster and deeper than “true” or “factual” news; a study conducted by the Massachusetts Institute of Technology showed that fake news is over seventy percent more likely to be viralised or replicated than “true” news (Dizikes 2018). Benkler et al. (2017) has suggested that the tendency of people to follow like-minded people leads to the creation of a false shared reality and the forming of a consensus within isolated social groups. As a result, fake news can exacerbate polarisation and is very dangerous to societies, democracies, and economies.

The primary driving forces behind fake news have been argued to be the monetary, social, and political benefits accruing from them (Zhang et al. 2019). The first is financial with news articles which go viral on social media drawing advertising revenue. When teenagers produced fake stories favouring both

Trump and Clinton, it earned them thousands of dollars (Subramanian 2017). Others were hired to produce pro-Trump stories for profit (Dewey 2016). The second motivation is ideological and political. Providers of right-wing fake news identify themselves as pro left-wing and wanted to mortify those on the right by showing that they circulate false stories (Dewey 2016; Sydell 2016; Allcott and Gentzkow 2017).

This phenomenon has affected the global media industries. News and desk editors receiving information over social media have limited opportunity to test its authenticity as they normally would with other sources. The task of sorting fake from real information and news is complex and burdensome, especially in a highly competitive media market. Several news media platforms have started to pick posts, comments, and articles from various outlets and publish them without verifying the sources or authenticity (Wilding and Fray 2018). Assessing the credibility of information has become a very challenging task due to the proliferation of news, the defragmentation of sources, and biased social cues.

Nearly 25 years after the introduction of internet and online news, it seems that the journalistic community is returning to the basic discussion of what is true and what

is false on the internet. Are online sources authentic? How can we detect fake news? How can we fight against fake news and the spread of hoaxes? It is a citizen's right to receive high-quality information, and the media's role to ensure that this information is truthful/factual. Finding credible sources, assessing news resources, and building reliable databases became the primary tasks in modern newsroom.

The term "fake news" came to attention following the United Kingdom's Brexit, the Catalan separatist movement, and – especially – Donald Trump's successful bid for the US presidency in 2016 (Silverman 2016; Subramanian 2017). Since then, there has been an 'explosion of fake news', with major events changing their course due to misinformation; smear campaigns have become a popular way to sway the public (Allcott and Gentzkow, 2017; Vosoughi et al., 2018).

There is no agreed definition of the term "fake news". Several researchers state that it is not a new phenomenon seeing it as a natural development of protocol and propaganda news that has surfaced with right-wing politics. The term is often mixed up with fabrication, hoaxes, and satire (Tandoc Jr. et al., 2017; Allcott & Gentzkow, 2017; Klein and Wueller, 2017). Liu and

Kai (2019) have stated that it is the intent to harm and manipulate that differentiates fake news from other concepts, stating that satire has no intent to mislead or deceive readers and is unlikely to be perceived as factual. Similarly, hoaxes are motivated only by fun or to scam targeted individuals especially politicians. Finally, rumours do not originate from news events.

Fake news therefore is the “deliberate distortion of a reality, which manipulates beliefs and emotions to influence public opinion and social attitudes” (McIntyre, 2018:8). In the news media, therefore, fake news is seen as news articles that contain false information and/or are created with the intention to mislead readers or to intentionally cause public harm. The European Commission’s study on a Multi-Dimensional Approach to Disinformation (2018), sees it as “inaccurate or misleading information designed, presented or promoted to cause public harm intentionally or to obtain a benefit” (10).

Turning to the Arab media, fake news is not a new concept. Such news has been present since before the advent of internet dis/misinformation. In the Arab world, fake news is closely related to deliberate disinformation and information,

and media manipulation, usually conducted by Arab governments or elite businesses (Alandete, 2019). Fake news is therefore closely related to issues of disinformation and information, and of media manipulation. Fake news does not have to be an absolute lie. It usually has some real connection with what is happening, but rather represents a grotesque distortion and is always conducive to sensationalism and populism.

“Fake news” became a popular term in the Arab world following the 2010 mass demonstrations that developed into revolutions – usually referred to as the Arab Spring. The Arab spring was a platform sphere for news and information domination arena that often mixed news, rumours, facts and fiction (O’Donnell citing Howard 2011). Several new and old political bodies and civic groups started to utilise the media in order to attract an audience. The proliferation of communication outlets turned the media – especially social media platforms – into a series of political circuses, each with its own agenda trying to manipulate public opinion. Several authors (cf. Jones 2019; Mutsvairo and Bebawi 2019; Martin and Hassan 2020) affirm that fake and protocol news were and still are used by several political actors – especially

governments and those who wanted to preserve the status quo – aimed at ensuring a lack of awareness or ignorance among citizens and preventing the circulation or disclosure of data, arguments, news or information that was not favourable to those who want to disinform (Mutsvairo and Bebawi 2019).

The effect of fake news on Arab news media has been devastating, with newspaper circulation and television viewership dropping by between 30 and 70 percent across the Arab region. Trust in Arab news sources has dropped 40 percent during the past three years (Martin and Hassan 2020). The question of controlling fake news is becoming a question of the continued existence of the media across the Arab region. In a study conducted on news media performance and journalistic work in 2019 showed that 87 percent of the audience across the Middle East are sceptical about media's role in informing audience, and say they expect the news they see on media websites and social media platforms to be largely inaccurate (Hanitzsch et al. 2019; Hamdy and Auter 2021). An additional 51 percent state that conflicting information due to misleading news is making them confused.

The purpose of this study is to further examine the issue of fake news in the Arab media. The study will examine the Al Jazeera network as a case study to further understand the tools used to control fake news, both as a source of information and to protect their content from misuse. To be specific, this study will answer the following research questions:

1. What approaches to knowledge management is used for fake news inside the Al Jazeera newsroom?
2. What strategies are used by the Al Jazeera to control fake news?
3. What is the role of artificial intelligence in controlling fake news?

In order to answer the research questions, this study will conduct qualitative structured and semi-structured interviews with members of Al Jazeera network newsroom, social media teams, the Sanad monitoring and verification team, and the media and emerging platforms and artificial intelligence (AI) initiative department, and scientists from the Qatar Computing Research Institute, who collaborate with Al Jazeera on special natural language programs. These teams/groups make up the fake news control team.

Theoretical background

Theoretical Strand: Media, Network Society and the Post-truth Environment

Several theorists (cf. Castells, 2008; 2015; 2021; Dahlberg, 2001; Van Dijk, 2012) have discussed the emergence of information communication technology as the foundation of a new form of public sphere. Revisiting his model, Habermas came to view the public sphere as “a network for communicating information and points of view [...] the streams of communication are, in the process, filtered and synthesised in such a way that they coalesce into bundles of topically specified public opinions” (Habermas, cited in Thomassen, 2010:119), a network that is not based on news and information but is directed by opinions. This discussion echoes Manuel Castells (2015; 2021) discussion about the role of deliberations inside a networked sphere. Castells sees information communication technology as enabling users to communicate in real time and to exchange and critique issues of common concern (Castells, 2015). As in a traditional public sphere, the media in general and the journalist process in particular are at the centre of the networked public sphere and are

the reason for its continuation (Castells, 2015). For Castells (2021), a strong post-truth network is an active network in which news and information travel between different actors/stakeholders, opening whole new lines of connection between journalists and their audience. Further, the massive development of satellite channels, social media, blogs, vlogs, podcasts, streaming, and other forms of interactive, computer-to-computer communication sets up even more communication networks, allowing individuals, groups, and activists to communicate with each other without going through the usual channels set up by the institutions of society for socialised communication. This new form of media constitutes what Castells (2008) conceptualises as mass self-communication, where people do not read or watch to inform themselves but to confirm their pre-existing beliefs (Castells, 2008; 2021).

The Arab networked public sphere can be seen as a set of interconnected nodes of audiences, political entities and groups – bloggers and activists, among others. These networks are dynamic, innovative, open structures that are infinitely expandable and integrate new nodes as long as they share the same communication codes (Castells, 2008;

El Gody, 2020). Audience discussions can encourage people to participate in public issues and talk to their peers; their voices are then heard by fellow citizens, the authorities and policymakers. Their interactive discussions are more truthful, reliable, and revealing than the main stream government media (El Gody, 2021).

The Arab Spring created a new political class to develop, each with their media outlets and their own “alternative truth” version, creating post-truth political debates about relativism, postmodernity, and mendacity in politics, including untruthfulness, lies, deception, and deliberate falsehood (Castells, 2015). McIntyre (2018) discussed how post truth societies during political debates are marked by relativism, postmodernity, and mendacity in politics, including untruthfulness, lies, deception, and deliberate falsehood. Post-truth in the post-Arab Spring world can hence be seen, according to the Fundación del Español Urgente (2016), as a neologism that describes a deliberate distortion of reality, to create and shape public opinion and influence social attitudes in which objective facts are less influential than appeals to emotions and personal beliefs. For some authors, post-truth is simply a lie (falsehood) or scam covered

up by the politically correct term “post-truth”, which conceals traditional political propaganda and is a euphemism for public relations and the use of strategic communication as an instrument for manipulation and propaganda.

Following this discussion, one can understand the role of fake information in today’s post-Arab Spring politics, where several political actors are behaving like typical right-wing politicians in spreading fake news and information to tap into audience attention. Networks of lies and rumours have therefore become the basic units of modern Arab society. These units include individuals, groups, organisations, and communities linked by information processes between and among them (Castells, 2015; 2021; Wilding and Flew 2021).

This shift presents a challenge to journalists, as it necessitates a fundamental shift in their agenda-setting role. It represents a new and different type of journalism, requiring a conscious sense of how journalists can make a deliberate attempt to reach out to citizens, listen to them, and have citizens listen and talk to each other.

Looking at the Arab media, media outlets have historically avoided connecting

with their audience, in the belief that professional journalism belongs to the elite class of journalists and that audiences need to be “passive recipients” of the news that is presented to them (Rosen, 2011). However, the rising wave of the Arab Spring and online activism have opened the door to a new form of journalism where active activists, citizens, and journalists meet to produce a type of journalism that needs to send information fast across different platforms (El Gody, 2009; Rosen, 2011). In an increasingly interactive environment, media organisations have needed to fit themselves into the audience’s information flow. The time where news was presented by media organisations to citizens has long gone. The public has become more active in the news production process (Heinrich, 2012; El Gody, 2013).

The use of the new media by citizens and independent journalists has created a new type of professional who functions as a node in the complex environment between technology and society, news and analysis, annotation and selection, and orientation and investigation (Deuze, 2008). Journalists can no longer work in “splendid isolation”, thanks to the abundance of information and the facts that, first, the public are

perfectly capable of accessing news and information for themselves, and second, that the institutional players (for-profit, governmental, non-profit, activist) are increasingly geared towards addressing their constituencies directly, instead of using the news media as a go-between (Russell, 2008; Heinrich, 2012). The utilisation of social media in journalism has added a new dimension to the production and the consumption of news journalism in the Arab region, and has enabled the creation of new communication spaces where diverse voices engage in conversation about matters affecting people’s daily lives.

New media – especially satellite channels and social media – in societies moving towards democracy acts as a means to escape from traditional information and communication systems – which are usually under government control – to a space where citizens can discuss issues of common concern (Jenkins, 2003; El Gody, 2013). Castells (2015) sees the new media in developing societies as a networked space to foster knowledge and create platforms for citizens to debate (Sicilia et al., 2005; Castells, 2015). The task for journalism organisations now is to figure out how to include their traditional and alternative sources and news in the information nodes and how

to provide factual information to their audiences (Deuze, 2008).

In the following section, I will present an in-depth reading on fake news in Arab media.

Fake News and the Arab Media

For the past 70 years, the Arab media has been deeply tied to the political establishment. One can still use Rugh's (1979, 2004) classification of Arab media as being largely authoritarian and shaped by loyalty to the regime (Gunter and Dickenson, 2013). The purpose of the media is to promote the main political, social and economic programmes of the government (El Gody, 2021). The state steers the media agenda and the direction of news to filter what audiences hear and see, and journalists construct heroic narratives around rulers and leading government figures (Sneep, 2013). Arab journalists are governed by principles of obedience and respect for the political establishment; they do not reach beyond the limits of a traditional relationship between the political class and the rest of the population (Amin, 2003). Transcending margin of freedom offered by the political establishment is not appreciated and tolerated across the Arab region.

For Arab governments, the media are a central tool in shaping citizens' understanding of domestic politics and the world. As Bagdikian (2000:26) wrote, the mass media are "the authority at any given moment for what is true and what is false, what is reality and what is fantasy, what is important and what is trivial". The government elite have long seen the public as a "bewildered herd" of "ignorant" and "meddlesome" outsiders (cited in Chomsky, 2003:4). The Arab media, hence, are not tools to "better inform" the people, "but rather gears of the government and elite" used to deceive the audience. They are not "plucky truth-tellers" but, for the most part, are enormously powerful corporations propagandising citizens for the system's own interests and agendas. They do not challenge power or elite narrative; they are the voice of the powerful.

As mentioned, fake news is not a new concept in the Arab world; it is closely related to government and elite group manipulation of information. The term is closely related to Wardle and Derakhshan's (2017) discussion of fake news as an outcome of mis/dis and mal information for the purpose of manipulating public opinion. The authors described the differences between dis/mis/mal-information: disinformation is

information that is false and deliberately created to harm a person, social group, organisation; or country; misinformation is information that is false, but is not created with the intention of causing harm; and mal-information is information that is based on reality, and is used to inflict harm on a person, organisation, or country (20).

The liberal hopes of liberating and diversifying the media that accompanied the advent of digital satellite channels and the internet were dashed by a strict centralised political system. The arguments for preserving this limited freedom of expression cluster around one reason: the preservation of the nation's unity and cultural coherence. Controlling sources of information is a common practice across the Arab world, where the media are allowed only to interview and get information from "official" or "approved" sources. This notion of the "deflective source" overlaps significantly with the idea of fake news, where "patently false information is intentionally presented in a phony but utterly believable news media format in order to sway public opinion" (Macaray, 2018:1).

Deflective source propaganda is increasingly necessary in contexts of

modern propaganda where the aim is to have the same narrative repeated by as many sources as possible. The narrative really only has one source – whatever establishment alliance du jour is beating the drums for war. But for propaganda purposes, it is necessary to make it look as though that narrative is shared by everyone, the mainstream media included. The "news format" is the legitimating device that deflects audience attention away from the credibility of the actual information on its own terms, or of its actual point of origin, to the perceived legitimacy of the means by which the information is now disseminated (Johnstone, 2018). Nevertheless, following the events of 9/11 and the subsequent global war on terrorism, there were no signs of a "slow-moving trend" towards the liberalisation of the media in several parts in the Arab world, such as Egypt, Tunisia, and Jordan. Allowing internet access, easing control over online content, and allowing private and independent media to operate were at the forefront of the changes. The movement in this has been boosted significantly over the past two decade or so by the development of information and communication technology, especially the introduction of independent satellite channels such as Al Jazeera, MBC and

Al Arabia, and the development of social media platforms. New forms of journalism were developed that reduced the Arab government and mainstream media monopoly on information, empowering groups which previously lacked a voice.

Hafez (2006) has stated that new media technologies have compensated for the inability of the weak, rigid political system to establish and mobilise links with Arab society. The increase in market competition between different news channels and social media platforms has led to even more citizen deliberation. More people seek out news and information, asking questions, offering comments, stating their opinions, engaging in political debates, and communicating with other readers. Information and communication technology has transformed communication in the Arab world from a mouthpiece for the Arab government to a tool that has taught citizens about their rights by breaking all traditional taboos and exposing the hypocrisy of the various political systems (Salah-Fahmi, 2009).

Being more democratic and less restrictive for information flow, information and communication technology has allowed audiences

to create a stronger and more robust civic “knowledge” society and has offered a forum for new actors to develop (Radsch 2018). Citizens have become publishers of information, as opposed to being merely receivers, creating a more active public opinion and a marketplace for ideas (El Gody 2021).

Al Jazeera has become a powerful symbol of this liberalising process and its influence across the Arab world and beyond has been profound. Several studies (Hafez 2006; Ayish 2008; Seib 2012; El Nawawy 2013) has seen Al Jazeera, with over 50 million viewers, as effectively an Arab political party. One effect of this has been that journalistic norms and practices in national news media services are beginning to be modified. The liberation of tight-source control is evident in several parts around the Arab world (Ayish 2008).

This shift in audience participation has presented a challenge to journalists, as it has necessitated a fundamental shift in their government agenda-setting role (Faris 2008). It represents a new and different type of journalism, requiring a conscious sense of how journalism initiatives can act as a deliberate attempt to reach out to citizens, listen to them, and have citizens listen and talk

to each other (Deuze 2008; 2010). The future of an information society across the region seemed promising, as independent and private news communities began to deepen and enhance political participation in the democratic process, creating an active parallel communication and information system. By paying due attention to public affairs, the satellite channels and the web have provided a true infrastructure of democratisation, which seemed to promise that the contemporary process of constitutional representative democracy would develop through the utilisation of information communication technology (El Gody 2013).

Between 2008-2010, Arab governments' versions of false and controlled information were exposed by the level of proficiency and fact-checking presented by the wave of new satellite channels and social media platforms where journalists became part of the audience network, providing information suiting their agenda. This wave of news platforms as "liberation technology" for the roles they have played as catalysts of popular uprisings in the Arab world (Diamond and Plattner, 2012). Several local social media networks have become established in countries

such as Jordan and Lebanon – for example, Aramran.com, 7iber.com, Ammannet.net, Ammonnews.net and NowLebanon.com, which offer news in text and video formats and echo satellite channel discussions. In Egypt's pre 2011 revolution, for example, information and communication technology has been integrated as a medium for public deliberation, creating a networked sphere(s). Many banned groups found new avenues to reach audiences. Issues that had been considered closed for discussion thus came to be discussed (Radsch, 2016). Egypt was governed by a strict regime where many opposition parties and political groups were denied the ability to communicate with society (Alsriddi et al. 2018). New media technologies offered Egyptians a space separate from the customary cultural authorities and historical framework of engagement, particularly between the elite and the subaltern. A new class of interpreters, facilitated by this medium, addressed and reframed political and social authority and gave a voice to those like themselves and others who visited the sphere (Radsch 2018).

Following the outbreak of the Arab Spring, citizens hoped for a more independent and reformed media.

Within media news organisations, a young generation of journalists tried to call for reformation of the news industry, aligning its goals to that of the revolution and building a new democratic society (Mansour, 2015). In Egypt, the government press started to transform itself: Al Ahram apologised to the Egyptian people on February 13, 2011 for its decades of “bias in favour of the corrupt regime” and pledged that in the future, it would “always side with the legitimate demands of the people” and become “the conscience” of the nation (Peterson, 2011:1); accordingly, it was able to distance itself from the government sources for whom it had so long been a mouthpiece. Hopes for freedom of expression and a plurality of voices increased as new media outlets started to operate, representing the diverse political parties and bodies that emerged after the revolution (Peterson, 2011; Abdullah, 2014).

The Arab Spring created a ripple of reform and democratisation across the Arab world. Between 2011 and 2015, several political parties and activist bodies were formed. Three main groups benefited most. The first group was formed by political activists, especially Islamists, liberals, and civil-society and human rights groups that had been

deprived of their freedom of expression and coerced into silence for decades. The second was the social groups that challenged cultural norms and traditions; they used information and communication technology to make their voices heard. Finally, religious groups, especially the Salafis and Da’wa, found in a venue where they could express their ideologies and concerns to a wider audience (El Gody 221).

Fake news found a favourable stagnant public sphere for rapid development in the Arab world post the revolution. Several political sects started to disseminate false information, accusations, and rumours to control public opinion. For example, in order to control Tahrir Square, dissidents created rumours and voiced them on social and TV channels to control the masses. Post truth environment started to develop where rhetoric that speaks to the sentiments are in order, where repetition of the facts and truth becomes trivial issue. These sentiments and opinions are quickly picked up by social media activists and the rumours are soon seen as true (Josua and Edel 2021).

Post-revolution political actors started to create satellite channels and social media pages to echo their discussions

and attract communities, and enable these communities to interact with each other (El Gody, 2016). On the other hand, clashes between Arab governments and online dissidents intensified as online discussions played a critical role in deepening sectarianism in Arab societies. The media rumble between the different sects gave the Arab governments the ultimate opportunity to control media discussions, claiming that new media deviated from being a tool of democracy to one that could fragment society. Even though the media landscape in Arab world has changed dramatically since the end of the twentieth century, and is now characterised in particular by the emergence of TV satellite channels and the penetration of the internet and social media, there is still a disjunction between the promises carried by these technological developments after the revolution and the realities of Arab politics (Amin 2010; Ayish 2018). Arab governments have started to move from the viewer side of technologies to the producer side. Understanding the threats of new wave of democratisation, several governments have started to utilise new media technologies to defragment new pro-democracy voices. Similarly, several governments have started to impose restrictions on service providers;

others have started to impose tighter measures on infrastructure, with laws and regulations that tighten control over media landscape; surveillance has become a common practice in almost all Arab systems (Josua and Edel 2021).

In several Arab countries following the Arab Spring, laws were created to allow the political regime to exercise the right to dominate, interfere and close any channel at any time, while allowing other channels to break these same laws when they so wish (Gunter and Dickinson 2013). Several governments cracked down on Islamists, secular opponents, activists, journalists, lawyers, artists, and intellectuals. Human right organisations claimed that there were around 360,000 political and activist dissidents behind bars across the Arab region: “The Arab Spring was short lived [...] [as regimes] has learned the worst lesson – to nip any hint of freedom in the bud” (Darwich 2017; Callamard 2021:1).

In this context, traditional news companies -especially government media-, trying to reposition themselves in the new reality, provided their clients with what they desire: information that confirmed their beliefs. The emergence of social media also intensified the process of blurring “the lines even further between news and

opinion, as people shared stories from blogs, alternative news sites,” (McIntyre, 2018:93). Thus, “without knowing that they were doing so, people could feed their desire for confirmation bias (...) directly, without bothering to patronize traditional news sources” (McIntyre, 2018: 93-94). The result of all this is a polarized and fragmented society, in which:

“The demonization and enemization of political adversaries thrives, contributing to the decay of democratic rule. This polarization is magnified due to ‘epistemic spillover’, in which disagreement with another person’s political views is transformed into a broad distrust that encompasses other domains beyond the political. This leads to the formation of “political silos” or “echo chambers”, which can be defined as ‘communities... increasingly segregated in terms of politics, culture, geography and lifestyle.’ Thus, fragmentation and political polarization are not incidental elements of the ascendancy of post-truth – they are the main goals of political agents interested in disseminating an ideology, controlling alliances and exercising political domination” (Cunha 2019:3-4)

Few studies (cf. Marei et al. 2017; Bouchikh 2021; Nagoudi et al. 2020) discussed

forms of fake news in Arab media post the Arab Spring. “News fabrication” was seen as the dominant form of fake news, especially on social media. With the fragmentation of media and its war over clicks and shares, several news media – especially in Lebanon and Egypt – fell into the trap of news fabrication either intentionally or without verifying sources. Exploiting the political instability in both countries, fabricating news and posting false statements were a common practice that led several news outlets to behave in an atypical way for the yellow press. In Qatar, a study on the use of social media during the boycott showed a systematic dissemination of fake and fabricated news circulated by a digital army to spread anti-Qatari sentiment across the Arab world (Darwish, 2019). In Egypt, the Supreme Council for Media Regulations counted 74,000 fabricated news in one month. Unfortunately, poor working conditions contributed to this phenomenon. Several newspapers across the region hire journalist rather for their ability to publish news and generate clicks than their ability to produce high-quality journalism. In Jordan and Egypt, to try to secure a permanent position in media institutes, junior and trainee journalists tend to hire active internet users that surf the

net for news and information in order to guarantee that their stories are published.

This issue created another issue – “sloppy reporting”, i.e., news stories that have some basis in fact but are used in the wrong context and misinterpret information. This is misleading news that is not based on fact, but supports an ongoing narrative – news where there is no established baseline for truth, often where ideologies or opinions clash and unconscious biases come into play. Conspiracy theories tend to fall into this category. In several countries, such as Egypt and Tunisia, a new form of reporting that was based on “constructive journalism” was adopted to support the narrative of the government in rebuilding the state after the revolution (El Gody and Allam, 2021). Soon constructive journalism turned to be a rebirth of the 1960s style of propaganda news that aimed at supporting the government’s agenda.

In several cases, governments have been the source of the misleading information, creating a “Moral Panic Effect” in society and allowing the elite to represent itself as the saviour. This style of propaganda is popular among Gulf states; the intention is to stop the wave of

democracy falling into civic war, as in Libya and Syria. This made news, headlines, and images look the same as they originate from the government’s office. Editors and journalists are expected to publish the information they receive without further development or investigation.

“Satire and parody” information is also a common misinformation practice; several audiences have disseminated hundreds of items of humorous and satirical information as fact. Clips from satirical programmes such as El Bernameg among others, were reproduced and their information dealt with as facts that require action.

“Image and video manipulation” is the easiest way to generate fake news post Arab Spring – this involves editing photos using special software or presenting real images as having been taken at another time and/or place. Both are common forms of fake news. Several of these videos were used and echoed in satirical entertainment programs to target political groups in Saudi Arabia, Tunisia, and Egypt. Several fabricated videos were used as during armed conflicts in Syria, Libya, and Yemen or in intercultural conflicts, such as involving the Shiites in Bahrain.

As mentioned earlier, the burst of fake and misleading information in Arab media has affected its credibility. The audience has started to gather their information and daily news consumption from entertainment shows and social media platforms. Several media outlets across the Arab region have started to use tools to check online information, creating online teams to counter fake news. Some newspapers, especially in Lebanon, Morocco, and Tunisia have partnered with international media. For example, the Lebanese Al Nahar newspaper organisations, like Le Monde and Libération, use fact-checking tools DECODEX and Désintox. Further, Al Nahar sent several of their staff members on specialised training programmes to learn how to detect fake sources.

Other newspapers, such as Youm7 in Egypt and Echerouq in Algeria, have focused their attention on the audience side, creating a manual for readers to detect fake information, providing basic fact-checking websites that can help audiences to check whether the published information is true or not. The Supreme Council for Media Regulations in Egypt publishes a monthly report for audience to see the “main rumours

and lies” detected during the month. Several segments of the report are published in almost all major newspapers, as well as on TV programmes. The council has also created a hotline for audiences to report on fake information being circulated or posts where they suspect its authenticity. Similarly, in Lebanon, a number of media outlets have created the lebanonnownews.com portal, which includes the main circulated fake news with a warning to users about them. Newspapers have also started to utilise initiatives to check information. These include snopes, fakerfact, newsguard or their Arabic counterparts, such as matsada’sh and fatabayyano, and are used to check the authenticity of information. Other programs, such as YouTube Data Viewer, are also used to check for video authenticity.

Other news organisations adopted the concept of “slow journalism”, stating that for the news process to verify source authenticity, they cannot keep up with the fast pace of information. However, these organisations quickly changed their stand as their circulation/viewership dropped significantly.

Tech organisations such as Google,

Wikipedia, Twitter, and Facebook have teamed up with several Arab media organisations in United Arab Emirates, Qatar, and Saudi Arabia to use their open-source technologies to detect source authenticity. These initiatives have been proven to be successful in building a large database of fake content, sources, and users that warns users against quoting or using their information. Both Facebook and Twitter have suspended accounts that showed involvement in initiating and/or spreading volumes of fake content.

Training organisations and initiatives, such as the Facebook Journalism Initiative, RSF, and IJNET, and in the Arab world like ARIIJ among others, have developed specialised training programmes and workshops to train Arab journalists to use tools to detect fake news and verify sources. For example, Google has created a training programme to support “objective journalism”, to train journalists in verifying and diversifying sources.

Although these initiatives seem promising on the surface, after examining them closely they seem insufficient, as the fake news machinery is always one step ahead. Time spent on checking information authenticity is not enough as

fake news travels faster. Also, publishing the fake information under the heading of “rumours” or “misinformation” did not stop the audience from checking this information or sharing them. Building tools to stop fake sources from spreading seemed to be a plausible solution to combat fake information. Further, several international media institutes have turned to AI in the hope that fast and automated computer systems can deal with a problem that it seems they cannot handle manually. AI can speed up processes such as going through the vast amount of content published online every day and flagging material that might be false. Few media institutions in the Arab world have the capacity to implement these techniques.

The study will examine the Al Jazeera network as a case study to further understand the tools used to control fake news, both as a source of information and to protect their content from misuse. The study will analyse the approaches to knowledge management for fake news inside the Al Jazeera newsroom, different strategies are used to control fake news, and the role of artificial intelligence in controlling fake news.

Methodology

As mentioned earlier, this study is based on qualitative structured and semi-structured interviews. Perhaps the most important reason for employing qualitative research is that it draws data from natural settings. A qualitative inductive approach allowed me to understand newsrooms as a social world from the point of view of the actors – reporters, journalists, developers, etc. Moreover, through an inductive approach, I was able to create a plan for inquiry, investigation, and data collection; after which, the data was analysed to detect any emerging patterns (Gray, 2004). As this research focuses on the phenomenon of newsroom operation, qualitative analysis allowed me to “focus only on a set of relationships while studying the problem under investigation” (Lindlof, 1995:21).

Interviews is a conventional method when conducting newsroom studies, especially when dealing with news routines. This method aims to provide pragmatic advantages when exploring complex research questions which are true for this study. This study sees source verification as a product of the interaction between journalists themselves, technology developers,

their sources (on and offline), their management, and their audience. Structured and semi-structured interviews allow access to different levels of reality within the scope of the study. Interviews allowed me to discover the most important factors in the transition, as well as how the business model has been reshaped and defined.

Focusing on a specific case study – Al Jazeera – is of importance. McCombs (2003) argued that case studies are especially “valuable” when studying new media because many applications of new technologies – such as AI – are “constantly changing [...] additionally, it allows for flexibility in exploring unexpected issues that may emerge” (McCombs, 2003:41). Case studies give meaning to variables under study, enabling the understanding of the problems, challenges, and solutions reported. The selected newsroom may not be the same as for others, but “may be general enough to highlight the importance of rethinking and defining a media company’s rules to adapt to innovations and how work routines in media and news production affected when a medium decides to make the transition to a new technological platform” (Domingo, 2006:238). Therefore, this study adopts the case study as a form

of acquiring in-depth description of a specific phenomenon within the ethnographic method.

Eight interviews (see appendix 1), amounting to a total of 8.5 hours, with interview length from 45 to 75 minutes, were conducted with top management (editors), middle management (team leaders), journalists, and technology developers and scientists. Interviews with top management were designed to obtain information from the people who have a direct influence on the way the business model and structure of Al Jazeera is defined, the way the news works, how technological innovation has affected them, and how the news making and source verification process is carried out. The middle management staff is the nexus between what the top management decides and how employees apply it, and is responsible for executing the exchange process. The journalists describe the way newsroom works. They were also asked to give their opinion on how the process took place.

In this study, interviews gave “richness and vividness” to the research questions under study (Gillham, 2000:10). I aimed at conducting relatively loosely structured interviews with different stakeholders

within Al Jazeera to draw out the respondents’ ways of thinking about the issues with which the study is concerned.

Indeed, any organisation is composed of several “stakeholders”, who have different interests that become fundamental to understanding how those interests are articulated and represented in decisions that are made (Van Noort, 2008). Dealing with different stakeholders required different approaches for interviewing, which is why I used structured and semi-structured techniques while interviewing. The difference between these interview techniques lies in the “extent to which the interview is structured, and the degree to which the interviewee is allowed to “lead the content of the interview” (Gillham, 2000:2).

Al Jazeera: A Case Study

Al Jazeera was launched in 1996 in Doha Qatar. It gained its popularity seizing the opportunity to fill a void of high-quality news and professionalism in a newly emerging private news market (El-Nawawy and Iskander, 2002; Zayani and Sahraoui, 2007). Gunter and Dickenson, 2013 stated that what was special about Al Jazeera was the editorial freedom it provided to its journalists, as never observed before in the Arab

world. Al Jazeera introduced new genres, such as on-air live discussion of issues formerly considered by Arab authorities and public as forbidden, pushing the level of freedom of expression to unprecedented levels. Its independence also meant, for many of its viewers, that the channel told stories more accurately and allowed viewers to make up their own minds about the credibility of its reporting (Rampal, 2006). Soon, Al Jazeera became a highly recognisable media brand with massive media audience across the Arab world. Al Jazeera gained global recognition in 2001 with its exclusive coverage of the war in Afghanistan that brought a feed to other major global news organisations. During the US war in Iraq, Al Jazeera lead the global anti-US version of the war, showing the brutal side of the War on Terror, leading to international criticism of US intentions in the war in the Middle East (El Gody 2007).

As mentioned earlier, Al Jazeera played a critical role in Arab citizens' liberation process, which led to the development of the Arab Spring. The coverage of Al Jazeera during the Arab Spring brought mixed reviews; while its ratings were high for its coverage of the revolution in Egypt and Tunisia, it was silenced over the events in Bahrain, and

offered only tame coverage in Saudi Arabia and Oman (Gunter and Dickenson, 2013). People in the Middle East have heavily relied on Al Jazeera to obtain news about their region and the world, even more than YouTube and Google. Hillary Clinton, who at the time of the Arab Spring was the US Secretary of State, stated that "Al Jazeera has been the leader in that [it is] literally changing people's minds and attitudes. And like it or hate it, it is really effective," (Kellner 2012:46)

After the Arab Spring, several countries were alarmed by the role played by Al Jazeera in covering the revolution, in that they accused the broadcaster of siding with the Islamic project in Egypt and Tunisia and with the rebels in Yemen, Libya and Syria. Some studies have likened the role played by Al Jazeera to that of a typical political party with a clear political agenda, one that can affect millions of viewers around the Arab region. Several countries started to close Al Jazeera offices, drop or scramble its signal, harass and imprison its journalists, and apply strict laws and regulations to limit the "Al Jazeera effect". This has affected the news operation of Al Jazeera in several parts in the region as it has become harder to tap into its sources. This has led to the trap of producing fake

information. Al Jazeera has come into conflict with several Arab governments and political entities lobbying against it, gearing local media, social media platforms to spread accusations of bias, and unprofessionalism against Arab world. Several digital army activists, electronic flies have been hired to spread negative propaganda about Al Jazeera. Some content purporting to be from Al Jazeera was forged and distributed on social media to attack the channel's reputation.

Evaluating sources to avoid the trap of producing fake information coupled with protecting Al Jazeera content from being taped or misused, combating fake news is at the forefront of Al Jazeera effort. The following is a discussion on the strategies and tools used by the Al Jazeera network to control fake news.

Newsroom Structure and Fake News Knowledge Management

Al Jazeera's network is divided into 16 channels and news portals. Each channel/news portal works independently when it comes to its organisational structure, editorial policy, and target audience. Al Jazeera network hence follows a "dynamic" structure where there is an "integration of interest" between the

central management of Al Jazeera and the different channel/portal management and the different editorial bodies. The internal structure of Al Jazeera follows a modified form of the top-down model, the "wheel network structure", with the editor/leader at the top of the structure and the executive editors, staff, and support teams below working on solving day-to-day work-related issues and supported by the central teams. Dealing with source verification, each channel has a social media team/news operation team designed to help journalists verify sources and check news item authenticity (Interviewees 6 and 7). A central social media team also is designed to supervise the work of the local social media teams. Its purpose is to support local teams with possible verified sources, and assist local teams with fact-checking and resource allocations. A central agency for monitoring and news verification, "Sanad", is designed to give help to journalists in terms of in-depth source analysis and suggestions for source allocation. Finally, there is a research and development team that works closely with the IT application department on infrastructure issues and technical support, including developing programs -several using machine learning- that help journalists verify their sources and

check facts (Interviewees 5, 6, and 7).

Closely looking at the Al Jazeera structure, source verification is the central interest of news operation, with different level of data verification teams operating to support journalists with credible resources and source authentication. Sanad is Al Jazeera central source and data monitoring entity; it checks possible open sources and revises journalists' resources databases, and also helps journalists in allocating additional sources and data. In that sense, Al Jazeera is creating a central bot where journalists, editors, specialised teams, and technical assistants collaborate to produce a central database and verification tools to assist journalists in their daily routines. This 'dynamic knowledge management structure' helps journalists to be 'aware of the importance of data verification', understanding the responsibility of publishing information from reliable sources and presenting credible factual information.

In the following section, I will present the different strategies used by Al Jazeera to control fake news with close attention to the use of AI technological innovations to support source verification.

Social Media Teams

Fact-checking is a concept in combating fake news that goes beyond 'checking' of facts of an event that occurs. Fact-checking work is often devolved not to journalists but to specialized teams, often much closer to documentation departments than reporters. The concept of fact-checking has thus always been relatively close to documentalists and watchmen. Ongoing teams are of importance as they deal with a very large number of "information," big-databases every day. Fact checking also is applied to sources used in daily news operation in terms of: quality of the source, reliability, and attribution.

In today's newsroom, large part of facts can be verified using search engines and the knowledge of database operation, or teams bringing together articles from mainstream reliable sources like news agencies or alternative sources like social media. This is done manually with teams or watchmen scan manually sources of interest. During the past few years AI automation were used to assist teams to verify sources. A number of newsrooms invested in developing program using machine learning to verify and scan sources.

Social media teams are the frontline

journalists working with data verification. Originally the social media teams were designed to moderate the news operations of different channels/platforms.

Originally, social media teams look at the 'three interactive functions of social media operation: tracking, sharing and creating - empower users to keep abreast of popular information, to repost any news. Verifying information is through monitoring audience comments that holds subjective facts (interviewee 2).

Specifically, social media teams are composed of five to seven journalists for each channel/platform who operate on a 24-hour cycle to post information, keep social media platforms active, monitor online discussion and audience engagement, interact with audience comments, and study audience reactions. With the rise in fake news driven by electronic flies, automated bots among others, social media teams use network analysis to check possible abuse of platforms terms of use, stated Interviewee 3, (Communication and Internal Marketing, Sanad Agency for Monitoring and News Verification). In 2018/19, social media teams became responsible for assisting journalists in verifying online resources, including traditional and alternative sources.

Further, social media teams help build up a database of sources, links, and meta-data to assist journalists in their daily work. Social media teams cooperate with the IT Applications Department, the Information Technology & Security Unit, and the Technology & Network Operations Divisions in allocating open-source programs or specialised programs for data verification, stated Interviewee 2 (Director, Sanad Agency for Monitoring and News Verification) and Interviewee 4 (Tools and Development Dept., Sanad Agency for Monitoring and News Verification).

Recently, Al Jazeera embarked on a project to archive sources, channels/platforms content, and expert and guest databases. Social media teams and IT department are leading this project. This big data project purpose is to assist journalists verify their sources and create a central system of resources which is part of efficient knowledge management technique based on utilising the collective wisdom (Interviewee 3).

Also, the data aims to assist journalists get the necessary background information, facts, possible interviewees and expert list, and video and image library that helps them to do their daily work, stated Interviewee 6 (Application Programming Interface (API) Engineer,

IT Applications Department Information Technology & Security Dir. Technology & Network Operations Division).

Sanad

Sanad is the Al Jazeera Agency for Monitoring and News Verification, an independent agency created by the Al Jazeera network for the purpose of authenticating information, verifying sources, helping journalists with additional resources, and building a database and archive system. The project started in 2018, currently employs 35 journalists, divided into supervising editor, research and development unit, technical and support unit, and five expert regional/geographic topic teams specialised on issues such as Islamophobia, politics, etc. These teams provide in-depth stories and investigative reports with the purpose of providing different Al Jazeera network channels/platforms with a thorough understanding of their daily work (Interviewee 2).

Sanad support team designed a WhatsApp application interface service to receive journalists' requests to check sources, data and information verification, audience network analysis, and fake content. Teams receive between 50 and

70 requests per month; this can reach 100 requests during crisis times, such as covering the 2021 events in Gaza. "We are a new but ambitious project, two years but accomplished a lot," stated Interviewee 2 (Internal Marketing and Communication Unit). Sanad receives an average of three to seven requests per day mostly from breaking news journalists or investigative reports. Data verification and support passes through two phases. Upon receiving a journalist's requests, team members immediately prioritise requests according to deadlines, check the links provided by the journalists – if any – for authenticity, search the database for resources, and send them to journalists to start developing their story ideas, with recommendations, background information and trusted links, till the second phase "deep analysis of requests is fulfilled," stated Interviewee 4.

Usually, in-depth verification passes through one of three tools according to the complexity of the request and demands. The first set of tools is via the use of specialised programs and web-based verification tools such as reverse image search using Google Image or Yandex. It also involves checking basic facts using in-house/ Qatar Computing Research Institute

programs such as Tanbih or web-based fact-checkers such as PolitiFact, or subscriber services such as APcheck (Interviewees 3, 5). Their approach utilizes a machine learning system to analyse text and generate a score that represents each article's likeliness that it is fake news. This score is accompanied by a breakdown that explains the rating and provides transparency. These tools provide a success rate of 85–90 percent in detecting fake information (Interviewee 4).

The second set of tools deals more with profound text analysis using programs that perform text analysis. Usually, these tools are paid services/service upon request; this is, however, modified by the Al Jazeera AI and Information Technology developers to customise the programs/service to the Al Jazeera network's needs. These tools tests text attitude and searches also for key words (usually sentiment or provocative words) that triggers a suspicion of fake content. Several of the fake news “flags come from social media, especially Twitter,” stated Interviewee 5 (Head of Media & Emerging Platforms, IT Applications Department Information Technology & Security Director Technology & Network Operations Division). That is, there is a specific focus on checking Al Jazeera

social media platforms and content for account authenticity, presence of images, tweet and retweet activities; “if the information is suspicious [...] we communicate with social media platforms like Twitter and Facebook”. If such words are detected, flags are posted to journalists with recommendations not to use or to use the information with caution. Text analysis is also used in analysing social media posts such as cross-referencing tweets and audience reaction, as well as user comments and interaction (Interviewee 4). Sanad teams also use artificial intelligence models (written in python and R languages) specialised in analysing image and video authenticity by checking the digital fingerprint, as well as facial recognition and repetition (Interviewees 5 and 6).

The third set of tools are designed for in-depth and investigative projects that require collaboration with international media partners such as AP, BBC, and CBC, or developers such as Google, Facebook, Twitter, or Microsoft in cross-referencing. These are used with special permission – mainly to protect the Al Jazeera scoops – and are designed for stories with global outlook that require a thorough text and image analysis (Interviewee 3).

They are also used for combating global fake news threats that require interference from international journalistic community, such as global systematic manipulation of public opinion during the 2021 Gaza war or systematic fake threats from Eastern European countries (Interviewee 6).

The Sanad agency has embarked on a Big Database project that archives journalists' requests for future support for other journalists who are writing on the same topic. This database will be linked to the WhatsApp platform where journalists select from keywords. These keywords are transferred to search pointers that lead journalists to immediate sources till the team fulfils the in-depth phase of research (Interviewees 3, 4). The WhatsApp application is linked to a special database that helps journalists do their daily work. The database is divided to verified sources that helps journalists to verify sources themselves like: Sources that help journalists spot and identify fake news like Hoaxy and Snopes; Sources that helps journalists with watching searchers and news breaking news like Google Trends, Meedan's Check Sources for verifying images and video content like google images, izitru, Tineye, fotoforensics, and watchframebyframe; Sources that scan

social media content and predict break out storied like PHEME Spike and Crowd tangle; and other verified media sources like LeDecodex, and AP check.

The database also provides journalists with "flagged sources" and sources that journalists need to be cautious of. "Currently, we are archiving between 60 and 70 items per day to finish this project by the end of 2021 to launch early 2022," stated Interviewee 4.

Sanad plans that the final prototype of the WhatsApp application will be fully automated using machine learning providing journalists with tools that helps them in verifying sources and identifying fake news using the tools:

- Weighing facts and assigning scores, using natural language processing engine that scans text, giving tags to headlines, body text, name of sources mentioned, images used and deep analyse them assigning scores of trust (from 0-100) flagging suspicious content.
- Predicting reputation of sources, through scanning social media and other alternative sources mentioned in media. Predicting their reputation using features like examining their domain name, traffic...etc.
- Scanning sources for sensational

words, using natural language keyword analytics in discovering sensational or inflammatory words embedded in headlines, text, images and videos.

A special team works daily on updating the open-source database for possible utilisation by journalists. This list is sent regularly to different Al Jazeera channels and digital media platform teams to update them with new available tools that help them verify their information on a daily basis – from social media activity sources to Avia marine maps, meta-data links, and updates of expert and interviewee lists (Interviewees 2 and 3).

The Sanad team service is not limited to providing source verification services; the presence of specialised and expert journalists/editor teams utilises the tools in creating investigative news stories. “We learn as we go, we learn our capacity and develop our competence, we are a journalism department at the end of the day,” stated Interviewee 4. Another team collaborates with the IT department in research and development new programs, software based on journalists’ need: “the more journalists utilise our service, the more innovative we become in testing and developing new tools to help them better perform their work,”

stated Interviewee 4.

The Sanad project is considered a pioneer initiative that aims at “combating fake news from the sources [...] by constantly monitoring our resource lists, we can allow journalist to work with more ease and limit source misinformation,” stated the SF, Tools and Development Coordinator. Adding that the plan is to continue developing the WhatsApp application and make it open as an open access tool first to Al Jazeera community and assist the Arab media community with Sanad fact-checking services (Interviewees 2, 3, 4).

Using AI in Detecting Fake News

Although there is a level of Human Communication Interaction (HCI), all previous efforts are human-oriented tools. One needs to understand that newsroom automation and the diffusion of AI in newsroom operation needs time, as stated by Interviewee 1, Editor, Media Initiatives Department, Al Jazeera Media Institute. This is particularly of importance to Arab media with its long history of media and content manipulation, and information and source control. In addition to issues of developing databases, Arabising content, developing Arabic natural language processing programs (NLPs), and enhancing journalists’

capacities (Interviewee 6).

Nevertheless, Al Jazeera is developing a plan to fully implement AI in all newsrooms in two years. “It is a part of a bigger plan for newsroom automation using AI in news reporting ‘Robot journalism’ and using AI in data verification, control fake news,” stated Interviewee 5. Interviewees revealed is that there are AI elements already implemented inside the Al Jazeera newsroom.

“Fake news travels faster than being debunked,” stated Interviewee 7 (Principal Scientist, Qatar Computing Research Institute). In today’s post-truth environment, newsrooms need to be one step ahead of structured and non-structured fake news dissemination, stated Interviewee 6. Unfortunately, there are several structured electronic, flies, automated bots, and digital armies that try to control public opinion in the Arab world (Interviewee 7), adding “whenever newsrooms and science debugs some of their strategies, new techniques are developed the next day: from sensationalism to sentiment content [...] everyday witnesses new strategies developed – especially over social media” (Interviewee 7). Human teams are important at this stage in tracking sources and building databases, but “we need to use AI to automatically

detect fake content and stop the spread of propaganda and fake content in real time before their circulation”, stated Interviewee 8 (Principal Scientist, Qatar Computing Research Institute).

“Diffusion of AI innovations is a process and is based on different steps. We need to understand the utilisation of the current tools before moving to the next level,” stated Interviewee 5. The Al Jazeera network understands that “introducing technological innovations can be challenging for a number of journalists,” which is why “we take it one step at a time, so the automation process does not disturb workflow or quality,” added Interviewee 5. The first step is already implemented with several programs journalists are using in data verification are using AI technology, the second step is designing user-friendly in-house programs and working with developers – using machine learning – to customise programs that journalists can use for source verification and data verification. The final step – currently under testing and/or development – is diffusing AI APIs at large either developing in-house or with developers or media partners (Interviewees 1,5,7, and 8).

Several programs that journalists use in

their daily activities for content checking and source verification are based on AI technologies. APcheck, Politicheck, DLIP, spaCy Universe among others are based on AI databases. “We believe web-based programs and user-friendly program interfaces are a good starting point, although many journalists are utilising these programs at large or as we hoped [...] but we are sure that at one point through training and providing manuals, journalists will be able to fully utilise the programs,” stated Interviewee 4, adding that the implementation of the WhatsApp service will give a proper push for journalists to expand their capacities using AI technologies.

Tanbih is a news verification tool developed by the Qatar Computing Research Institute. The purpose of the website is to assist journalists and the audience in exposing fake news from different Arab/global media outlets. Some information is cleared by Sanad and other teams flag information. Although it is primarily targeting the audience, “we found it a useful tool that journalists are using to verify data,” stated Interviewee 3.

Interviewee 5 stated that Al Jazeera has created five teams under the media and emerging platforms group, employing

between 30 and 50 machine learning specialists, data scientists, data pipeline specialists and business analysts, who work to develop and support information and communication technology, including AI, inside different Al Jazeera newsrooms. These teams work at different levels, from coordinating with open-source programs, programming add-on features with providers, to customising programs for the needs of Al Jazeera, and coordinating with the business world and software developers to utilise special features for Al Jazeera. “For example, we work with AVID to better detect faces and geographical marks that help journalists better develop their work,” stated Interviewee 5. This is besides research and development: “We designated a team of 20 developers to produce in-house programs using machine learning to create our own version of APIs that help journalists verify their sources and better do their jobs,” added Interviewee 5.

“Working with the business world for customising programs that match our need is important [...] for example in building our database for verifying videos these [...] for example a program that is currently working with a project using machine learning that deeply analyses journalists’ scripts and suggests

images/video according to the text from databases. This means that Al Jazeera is archiving its entire video and text library and use machine learning to suggest ‘verified’ material for their journalists,” stated Interviewee 5. What is new about this model is using machine learning in distributing the right content to the right journalist, i.e., it can tailor the right material to the right journalist to the right newsroom: “So we basically give the production line journalists the intelligence, the right stuff [...] right shots, the effective shots, pictures that can be used [...] right use of images according to the script real images that match the text [...] one can imagine what is next which is selecting the right images that can make an impact on the target audience whether they live in the Arab world or internationally,” stated Interviewee 5. As a result, journalists do not need to spend hours searching for text and video libraries: their sources are there using their profiles (Interviewees 5, 6). In another initiative that deals with detecting fake content, especially that comes from Eastern European outlets, Al Jazeera is building a tool to detect if a news item is fake that is based on “testing sentiments.” It targets news articles with longer text, and it is based on the idea that fake news articles often receive reader attention by means of emotional

appeals: “So basically we are looking at the flow of affection in the news article. Tests showed a precision of 90 percent.” (Interviewees 2, 5).

The AI teams are also working with the news regulatory bodies such as IFCN and EBU to verify data and better develop their programs and source databases to limit the spread of fake news. The AI teams also participate in different hackathons and programming events to stay at the edge of the technology and understand the “next technology in detecting fake sources,” stated Interviewee 5.

Furthermore, working with the industry is an important step in learning from the different experiences in combating fake news. Al Jazeera is working closely with the BBC and Reuters, among others. Currently, Al Jazeera is part of Project Origin, an industry-wide effort between Al Jazeera, Reuters, Microsoft, New York Times, and CBC to detect fake news and deep fakes through tagging the original content and following its digital fingerprint and video ID, and creating a blockchain of sources. For example, if a segment from Al Jazeera is published on YouTube, the content is detected for specific video signature to see if it is authentic or not. YouTube is then contacted to delete the

content based on copyright infringement. This is one way to protect Al Jazeera content from being misused.

Al Jazeera is creating its own AI blockchain platform of trusted sources. The blockchain is essentially a trusted mechanism built in a distributed manner, with the aim of rebuilding the trust relationship of the entire source society. The blockchain can transform traditional trust patterns between sources into trust in machines. The blockchain provides users with their own defined trading source-contracts called smart contracts. Smart contracts are programming languages that are applied to blockchain technology. Smart contracts are used to manage the access and use of data. Al Jazeera is developing a “factual database blockchain data architecture to trace back during the process of analysing, tracing, and ranking the news. Sources – especially open and social media sources – are divided into two groups: one group is able to trace back to the factual database in the news blockchain supply chain graph, and the other group cannot”.

Building blockchain of intelligent databases is of great value, and using AI to make database smarter is a ground-breaking tool for Al Jazeera. “Imagine

giving journalists a tool where while they are covering a press conference detect the speaker, cross reference his discussion with statements he made earlier and suggests and gives journalists a real-time profile of his/views and cross reference them with the political party that he affiliated with?” stated Interviewee 7. Or “having a database that can suggests guests ‘intelligently’ according to their previous views, statements, published statements [...] this is what is next when it comes to newsroom operation and the journalism industry,” stated Interviewee 5, so it can stand future competition.

AI is used also in broadening resources outside traditional agencies, into new forms of journalism, such as citizen and network journalism and general audience that posts information, tips and leads on the Al Jazeera website is an important path for Al Jazeera to diversify its sources (Interviewee 6). “However, we are confronted with questions of which source and lead can we trust or not” (Interviewee 4). For that reason, Al Jazeera is developing a project that profiles social media resources, using network analysis, a database of trusted followers, sources, links (or not) and uses AI to automate a scan to update the list. “Using AI can detect close networks building bonds and create

intervention with citizens and networks that are suspicious,” stated Interviewee 8 (Principal Scientist, Qatar Computing Research Institute). Also, the program can detect such clusters using 100,000 tweets or more – using hashtags, for example – and prioritise what is or could be important for Al Jazeera journalists and audience (Interviewees 6 and 8).

Other programs under testing and development that utilise AI involve video automation, where long videos, such as three-hour reels or hours of press conferences, are analysed and stored automatically (Interviewee 5). Using ENR image recognition and text recognition, the programs automatically detect faces – including our own journalists and sources and sort them and archives them in database – using Microsoft facial recognition and spaCy, image locations detection, analyse text for keywords and statement and stored automatically and then verified by journalists for future use (Interviewees 2, and 5). Some of the features that were problematic before AI, is that we can now aggregate all different styles, names and even dialects together. For example, we can now aggregate D. Trump, Donald Trump, DJ Trump all under one category using NER. Further machines now can detect dialects and transcribe them accordingly

regardless if is Khaliji, Egyptian, Moroccan. This project saves journalists time from manually scanning videos and manual archives. On another level, these videos are verified for authenticity (Interviewee 5).

Other programs that are under development use natural language processing to detect bias in media content, especially on social media. This is done through detecting the language used, the repetition patterns, the use of emotional words, the hashtags used, and the key inflammatory words. This technique produces a 78 percent detection of fake news, which is high enough for implementation. Other programs in detecting media bias use counter-bot propaganda detection, especially when media use derives content from digital army and electronic flies.

There are other programs that are under development using AI ready to be used accordingly. “Anticipation is what is next in AI in newsrooms [...] developing a tool that can scan social media and different media outlets and can predict events like war and conflicts before it occurs,” stated Interviewee 7. This is based on studies conducted by scholars such as Chadeaux (2017) and Saleiro and

Soares (2016), for example, on learning from the news and predicting popular events on Twitter and scanning media for early warning signals. For example, scanning media allowed Al Jazeera to anticipate events that took place in Gaza mid-2021 and allocate proper resources and manpower to cover the events (Interviewee 5). “Scanning social media, we can profile audience discussion and looking at keywords we can predict if there can be an action or not.”

A final project that deals with the authentication of sources is to test Al Jazeera content in terms of fairness of coverage. “Few years ago, Al Jazeera was accused of over-covering the Jamal Khashoggi case, this was an eyeopener that we need to evaluate our news content and see the way it is covered, sources used, variety of voices, fairness in coverage in different Al Jazeera platforms,” stated Interviewee 5. Since then, Al Jazeera has decided to create a program that tests their own production. Quality assurance is an important feature in the modern newsroom; evaluating news content in terms of fairness, objectivity, and variety of topics is an important tool to “protect your brand and logo,” stated Interviewee 6.

Conclusionary Remarks: Challenges and opportunities implementing AI inside the Al Jazeera newsroom

Every wave of new technology, such as telephony, photography, computerization, or the internet, has changed the nature of the roles, tasks, and workflows in the newsroom (Pavlik, 2000). AI is no different. Studies have shown that more than 65% of newsrooms in the US and more than 70% of newsrooms in Europe have initiated investment in AI as a tool to report or to control fake news. AI is a technology that is and will continue to be used by the media – especially on news media platforms, where they often complement, but do not substitute for, trained journalists in Arab newsrooms. Humans still have an edge over AI in two key areas that are essential to journalism in the Arab media context: complex communication with Arab sources; and expert thinking in terms of debunking new fake news tools (Levy & Murnane, 2004). Certainly, a form of human–computer interaction will be the common mode for AI+humans in the foreseeable future.

For that reason, Al Jazeera has started the process of the diffusion of AI elements inside its different newsrooms. As mentioned earlier, a two-year plan has

been put in place to integrate AI into the journalism process on both levels: making the news (Robot Journalism); and controlling fake news (by using various tools, as discussed earlier, to verify sources).

Nevertheless, interviews revealed three main areas that can constitute a challenge to the full utilization of AI opportunities inside Al Jazeera newsrooms: technological and infrastructural challenges; economy and investment; and journalists' resistance to technology.

Technological infrastructure is not only the servers, computers, and cloud storage; it is about maintaining the needs of a diverse newsroom and a diverse range of journalists with an international profile (Interviewee 5). Securing the right technology for the right newsroom is an overwhelming task. Although on the surface there is the overarching Al Jazeera culture, different newsrooms are working independently and are segregated from each other as each channel has its own editorial line, production philosophy, and target audience (Interviewees 3, 5, 6). Introducing AI in different newsrooms is not an easy task as we need to customize needs to match newsroom identity and to select the "right databases, sources

to each journalist profile is a demanding experience" (Interviewee 5). Furthermore, "journalists are not static creatures. Their needs change constantly" (Interviewee 2).

Creating an intelligent system that can understand the journalist's profile and be customized according to their needs and individual interests is possible in theory, but the effort conducted needs more manpower and investment, especially with big and diversified entities such as Al Jazeera.

All technologies, including and especially AI technologies, embed and encode human values, and reflect choices in how algorithms are parameterized and defaults chosen – this is referred to as algorithm bias. This is especially of importance as it can affect the quality of automated reporting, and the selection and use of images, videos and text. It is also an issue while building databases. "How can we assure that the data entry is not biased especially when we are talking about big databases?" asked Interviewee 3. One solution that Al Jazeera is testing –based on the BBC model – is the segregation between the IT team and newsroom operation where the programming is done outside the newsroom to assure maximum transparency. Programs are tested

by journalists and editors for the quality of the service at a later stage.

Building databases that are custom-built for Al Jazeera and archiving the Al Jazeera library is another challenge. For example, creating street map recognition for Arab cities is not an easy task: “if we receive a video for an incidence that took place in a small city in Tunis, Morocco or Iraq, how can we make sure that the events took place really in that city, street recognition elements and creating tags for the streets and facial recognition for people involved and giving a unique ID for each person is not an easy task,” said Interviewee 5. Building a database of our own staff and their work is time-consuming, especially with changing nature of technology: “you can start building a database for a specific program and soon you need to shift to another simply because it is better” (Interviewee 6); “we started facial recognition using one program and we moved to another as it was better for our custom algorithm” (Interviewee 5).

Arabization is another technological issue. Although in theory creating a multilingual algorithm can be done (Interviewees 6 and 7), recognising different Arabic dialects ‘lahajaat’ has proven not to be an easy task, especially in terms of building

databases (Interviewee 5). It is easier when building a database to detect the language dialect, translate this into English to give it the proper tags, and then retranslate it again for the journalist’s use.

Economy is the second main area that challenges the smooth adoption of AI inside the newsroom. AI is an expensive technology and building a team of machine-learning specialists, data scientists, and data pipelines specialists, alongside a technical support team and a business analysis team, which work to develop AI is not an easy task. Finding the right people who can work with both the technology and the new world of AI is equally demanding. Having the financial resources to support all this is difficult, especially with the current economic crises. However, this issue is not exclusive to Al Jazeera but is rather a news community issue. Al Jazeera is tackling this issue on both a macro and a micro level. On the macro level, Al Jazeera is working with the global media community to evaluate different business models and experiences. Newsroom knowledge management is not an individual but a journalistic community issue. Fake news is a serious issue, and it is affecting all newsrooms, big and small. Collaborating on optimising the use of technology and

learning different experiences is important to have a strong presence in the market.

This approach – learning from the market – is implemented on the micro level, combating fake news; Al Jazeera so far depends on open-source programs, working with developers and in-house programmers (Interviewees 5 and 8).

Other services such as deep text and network analysis are financially demanding and are used for specific projects. Several of the AI tools are conducted on different stages in order to break down the cost over the long term (Interviewees 3, 4, 5).

Newsroom resistance to technology is not a new issue. The technology journalists are looking at is similar to newspaper papers that do not leave ink stains on the reader's fingers (Powers, 2007). Journalism is a human practice; whenever there is technological innovation, the question of whether technology will overtake the human side of journalism always comes to the surface. The development of robot journalism and news automation, however, has made journalists fear from AI more than other technologies. AI systems are tools built by humans to serve journalists' needs. AI is an opportunity for journalists and news organizations to

“exercise their ability to embed their own organizational and professional values into the technologies that then drive news production [...] if not journalistic values and ideology, then non journalistic platforms will fill the void,” often with fake information (Ananny & Crawford, 2014).

AI is far beyond automation, at least in current Arab media context. What created Al Jazeera's legacy is its ability to reach “the hearts and minds” of the audience and its ability to reach various audience with various backgrounds across the Arab world (Ayish 2018, Seib 2012). This is the advantage of Al Jazeera among its peers in the region, not being a “melting pot of information that audience consume” (Seib 2012). Affectivity cannot be achieved using Artificial intelligence – at least for the time being – “Human values are beyond technologies and algorithms [...] I don't think AI can capture them,” stated Interviewee 3, “This is what journalists need to understand [...] AI is not about replacement; it is about development,” added Interviewee 4.

The interviewees suggested that the segregation between the journalists' world and the technical world is a contributing factor to this friction. AI in journalism is about journalists who need to be part of the decision-making process. “I don't

think it is enough to survey journalists' requests and implement them remotely can stand long [...] soon they need to be integrated in the news production," stated Interviewee 3. "Compromise is a two-way street where both the journalistic and technical world develop, you can't operate in two different worlds."

The different perspective in how technology operates between the technical team, editorial team, and the journalist team was pointed out during different interviews. AI and scientists have high ambitions for their knowledge and education, and transferring this knowledge requires a collective effort on different levels. Providing "voluntary" training and "development manuals" is not enough. Interviewees pointed to the need to implement a policy to train all journalists in using AI, and provide them with the proper time and support to use the technology.

On another level, working in a global news network in the Arab environment is not an easy task, especially in the post-Arab Spring world, with events developing by the minute; journalists need to be at their top of their profession 24/7. With AI technology giving pointers to sources they can use, others are not recommended; assigning scores to

sources and guests is an exhausting task, in addition to their daily work. "Journalists want a clear answer of Yes or No," stated Interviewee 3. However, AI technology is based on mathematical probabilities. Assigning scores and pointers is a common practice in all verification models. However, building a "trusted database list and the new WhatsApp application will solve this problem".

Fighting fake information is a collective issue in a complex network. The journalist now is a professional who works as a node in a complex environment between technology and society, news and analysis, facts and fiction, truth and post-truth, annotation and selection, and orientation and investigation. Journalists cannot work in "splendid isolation" anymore, especially with the abundance of information, facts, and alternative truths available. The success of a newsroom in utilising techniques – including AI – lies in its ability to integrate Journalism and technicians, writers and camera operators, programmers and news gatherers and news processors, and coordinate between print, radio, and television journalism and the audience. The success of combating fake news in today's world lies in the organisation's ability to change its

working space into a news centre where journalists, the audience, and editors interact to analyse information and (re) produce it for local societies.

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Appendix 1: Interviews List

Interviewee 1 Editor, Media Initiatives Department, Aljazeera Media Institute.

Interviewee 2 Director, Sanad Agency for Monitoring and News verification.

Interviewee 3 Communication and Internal Marketing, Sanad Agency for Monitoring and News verification.

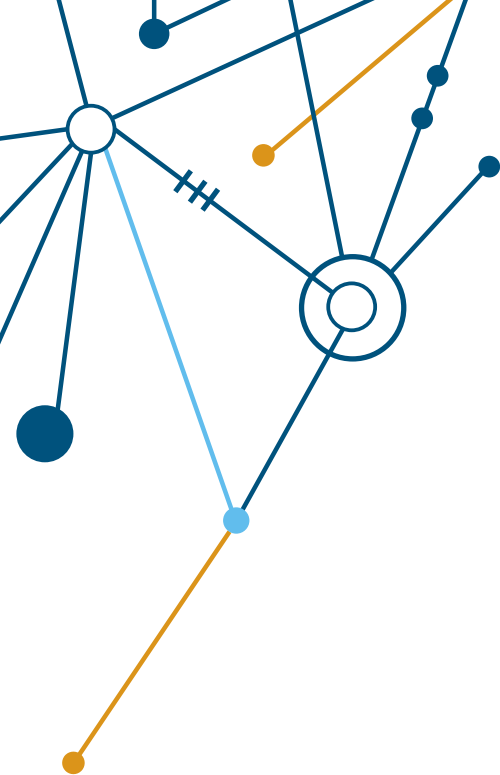
Interviewee 4 Tools and Development, Sanad Agency for Monitoring and News verification.

Interviewee 5 Head of Media & Emerging Platforms, IT Applications Department Information Technology & Security Director Technology & Network Operations Division.

Interviewee 6 API Engineer | IT Applications Department Information Technology & Security Dir. Technology & Network Operations Division.

Interviewee 7 Principal Scientist, Qatar Computing Research Institute.

Interviewee 8 Principal Scientist, Qatar Computing Research Institute.



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