



Article

Analyzing Media Content in Türkiye and the UK during the COVID-19 Pandemic Considering the Dimensions of Quadruple Helix Collaboration Processes

Lutz Peschke ^{1,*}, SeyedeShahrazad Seyfajehi ¹, Irmak Dünder ¹ and Yasemin Gümüş Ağca ²

¹ Department of Communication and Design, Bilkent University, Ankara 06800, Türkiye; 96.sh.se@gmail.com (S.S.); irmak.dundar@yahoo.com (I.D.)

² Department of Fine Arts, Bilkent University, Ankara 06800, Türkiye; yasemin.agca@bilkent.edu.tr

* Correspondence: lutz.peschke@bilkent.edu.tr

Abstract: The outbreak of COVID-19 between 2020 and 2022 highlighted the significant role of news media as a tool of communication among different social actors. Due to the novelty of the virus, most citizens turned to official news outlets to obtain reliable information about the disease and pandemic regulations. Therefore, a content analysis of news coverage in different countries provides insight into their Quadruple Helix dynamics, which reflects new patterns of knowledge democracy under consideration of the media-based public sphere. This article aims to trace the patterns of prevalent topics related to COVID-19 news in Turkish and British mainstream news agencies between September 2020 and March 2022. By deploying content analysis, this research endeavours to elicit public discourses created around the pandemic. These media agencies engaged in critical commentary on the pandemic situation and the policies enacted during this period, updating citizens with the latest information. However, the differences in the political and social structures of each country influence their Quadruple Helix knowledge exchange, which has a high impact on transformation processes.

Keywords: quadruple helix innovation model; news media; COVID-19



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1. Introduction

With the outbreak of COVID-19 in early 2020, several dimensions of public communication underwent significant transformations. Since then, the urgency and complexity of response strategies to the subsequent pandemic have interrupted daily life globally. During this period, news media have been a vital source of information, especially for citizens all over the world. As news about the nature and danger of the coronavirus spread as fast as the pandemic itself, media coverage of this global health crisis became extremely important to the public. One immediate result of this situation emerged within the practices of news reporting. Ranging from problems to solutions, such as the need for global cooperation, innovation, ways of crisis management, restrictions, closure of schools, and economic outcomes of lockdowns, these are now pressing issues covered by the news media. Given that the news media has proven to have an instrumental role in maintaining communication among different social, political, and scientific actors, an analysis of news coverage in different countries would give insights into their Quadruple Helix dynamics. Carayannis et al. (2012) developed the Quadruple Helix Innovation model, which describes the need for knowledge exchange among the four systems of science, politics, economy, and the media-based and culture-based public for sustainable innovation processes. The model was originally developed to contribute to solutions in the context of combatting ongoing climate change. The central aspect of the model is that innovation processes cannot be sustainable if development processes are limited to the triple helix of science, politics, and economy. Rather, the consideration of the knowledge of the media-based public is

vital. However, every system has its own way of producing knowledge. While scientific knowledge is mainly based on evidence and political knowledge is grounded in norms and ethics, public knowledge is hardly evidence-based and is mixed with emotions and opinions. Additionally, public knowledge, especially during pandemic times, is strongly influenced by platforms and media agents. While the feeling of personal involvement in the context of climate change is not always high, the feeling of being threatened by the pandemic is a much higher issue. Yet, knowledge about the coronavirus and COVID-19 is permanently uncertain since the natural environment continuously creates new variants of concern. Ultimately, this uncertainty has a significant impact on the way knowledge is represented in the media and plays a significant role in public engagement with scientific knowledge exchange processes. According to [Luhmann \(1996, p. 10\)](#), the media are themselves a system of the public. They construct reality within society as a whole, which can be regarded as mandatory in the communication process with other systems. Therefore, media agents have an impact on the processes of knowledge production within the media-based and culture-based public systems.

This article seeks to trace certain patterns employed by mainstream news agencies in Türkiye and the UK between September 2020 and March 2022. It investigates the contents that cover the coronavirus disease and the patterns used by news media to share information and create public discourse. In this sense, the research explores the themes of news content produced by mainstream news organizations in two different countries—Türkiye and the United Kingdom—from September 2020 to March 2022. These media agencies have engaged in critical commentary on the pandemic situation and the policies implemented during this period, as well as sustaining communication between citizens and authorities. However, the differences in governmental and institutional structures between the two countries have, in turn, affected how policies were developed to combat the devastating impacts of the coronavirus. This difference is best observed in the distinctions between the strategies of mass media in terms of news coverage and information sharing.

The media systems in Türkiye and the UK have significant differences regarding the aspects of political parallelism, journalistic professionalism, and media pluralism. [Hallin and Mancini \(2004\)](#) compared media systems across different countries and identified three models describing the relation between media and politics, which are the Mediterranean or Polarized Pluralist Model, the North/Central European or Democratic Corporatist Model, and the North Atlantic or Liberal Model. According to them, the media system of the UK is described by the North Atlantic Model. It is coined by commercial newspapers that developed relatively early and expanded with relatively minimal state involvement. The journalistic style in North Atlantic states is shaped by a strong tradition of political neutrality. However, the British newspaper market is characterised by a strict separation between papers that were read mainly by the middle and upper classes, the so-called “quality” papers, and sensationalist papers, which are divided into “middle market” and “mass market” papers ([Hallin and Mancini 2004](#), pp. 199–206). However, in contrast to the United States, Canada, and Ireland, the British press is characterised by external pluralism, which describes the co-existence of different and diverse types of media and media supports. [Chalaby \(1996, p. 311\)](#) states that “party-press parallelism” developed in Britain, where the press reflected the division in party politics closely. Nowadays, the British broadcasting system follows a market-driven business model. The exception is the state-owned *BBC*, which is indirectly controlled with the help of setting license fees. According to [Curran and Seaton \(2003\)](#), this concept followed the recommendation of the Crawford Committee of 1926, which connected public services to the British media system and enabled media independence, which ensured the promotion of cultural cohesiveness among the British elite ([Asekun-Olarinmoye et al. 2018](#), p. 16)

Although Hallin and Mancini do not directly assign the Turkish media system to one of their three models, it can be fairly described through the Mediterranean or Polarized Pluralist Model ([Hallin and Mancini 2004](#), p. 89). The Polarized Pluralist system has a pronounced tendency for media to be dominated by the political sphere. The media in

the Mediterranean countries and Türkiye are strongly politicized. Accordingly, political parallelism is distinctive. As described by the authors (2004, p. 99), newspapers in these countries mostly represent distinct political views. Newspapers, as well as broadcasting services, play significant roles in mobilizing readers to support political causes (Akser and Baybars 2024, p. 9; Yanatma 2021; Yanardağoğlu 2019).

The research that proceeds in this article has been motivated by these discrepancies, especially when they emerge during the same periods. Accordingly, this study investigates certain tendencies in the execution of news when they address different dimensions of the quadruple helix.

2. Theoretical Background

The COVID-19 pandemic has been described not only as a medical event but also as a social phenomenon (Teti et al. 2020). This description calls for a closer investigation into the role of various social actors involved during a pandemic outbreak. It also draws critical attention to the risks of undermining the complexities experienced by different stakeholders. Notably, during pandemics, a wide range of stakeholders depend on each other to access information, maintain systems, distribute services, and regulate preventive measures. Kopecka-Piech and Lodzki (2022) found that during the pandemic, mainstream media and social media were primary sources of information, along with government and WHO websites. Governments, on the other hand, are considered “the natural leaders for overall preparedness and management efforts” (Li and Lee 2023) in a public crisis. In a recent study, Li and Lee demonstrated that the government sector has a strong influence on the knowledge, attitudes, and behaviours of citizens during such outbreaks. The involvement of the public, as observed in this study, manifests a network, as asserted by Carayannis et al. (2016), among science, politics, the economy, the public, and the media, especially in times of crisis such as epidemiological diseases and ecological emergencies. Accordingly, the debated status of the COVID-19 pandemic as a social phenomenon forcefully figures into mass media, as the rapid virality of the disease requires effective communication within society through the media, which became imperative in the battle against this highly contagious disease. Notably, according to Schwitzer et al. (2005), during pandemics, the public relies on experts. Furthermore, Schwitzer recognizes the difficulty journalists have in framing news when “new information is being quickly uncovered by the expert community”. Therefore, the predominant sources of new information and knowledge are expected to be directed by experts and public health officials, with news outlets advocating the flow of factual information.

The COVID-19 pandemic has also been a reminder of the significance of sociological studies of pandemics in epidemiology. This is mainly owing to the fact that a society’s response to the spread of a virus is a determining factor in the success of contingency plans put in place. In the case of COVID-19, there has been a call for “qualitative inquiries [...] to capture social responses to this pandemic” (Teti et al. 2020). Uncovering factors influencing public response would result in a better understanding of how to inaugurate public participation during pandemics. For instance, in the information-led and hyper-connected societies of today, the source of information is a determining aspect of its impactfulness. The media, more particularly traditional news media, as one of the actors at the epicentre of the network of information dissemination, has a vital part to play in shaping the public understanding of events. Hence, during pandemics, news gatekeepers predominantly rely on experts as their sources of information (Schwitzer et al. 2005; Tanner and Friedman 2011). But, as experience from previous pandemics has proven, solely enforcing official statements from scientists and politicians to create a sense of urgency fails to cultivate sustainable public behaviour for pandemic prevention (Basch et al. 2020; Pan and Meng 2016). One of the recent methods for promoting sustainable approaches to persistent and wide-scale crises is the Quadruple Helix model, which aims to generate knowledge through collaboration among society, politicians, scientists, and industry (Marcovich and Shinn 2011). Evaluating the news media’s adoption rate of the Quadruple Helix model will

reveal the contribution of media to promoting sustainable public health behaviours. Such evaluation requires an analysis of how news is framed through the inclusion of viewpoints of each Quadruple Helix actor.

What affects the mentioned analysis is the media agenda. This practice refers to how “media elites translate the agenda of political elites, plus ‘people’, into the media agenda” (Schroeder 2018). The influence of political leaders on the media comes from a race for dominance over the media’s ideological hegemony. The media’s conveyance of meaning through symbols and its representational power draws an impactful image of events in the public perception (Block 2013). Influencing this process would give the ruling power the ability to direct public perception in their favour. For instance, in the news media, the abundant presence of government officials as news sources conveys that the government is the ultimate legitimate source of information. However, simultaneously, it is important to take audience reception into account since the financial survival of media agencies depends highly on ratings. Therefore, the concept of news marketing has become an important element of news media content analysis, which refers to the adaptation of news framing according to the interests of the news audience demographic (Bennett et al. 2008). As opposed to the one-way audience reception of the broadcast era, where the audience was mainly at the receiving end, the rise of social media audiences has become content producers as well. This has seriously challenged news media in framing news topics since it is no longer possible to focus on certain news angles and omit others based on the news agenda. Consequently, official news agencies are increasingly adjusting their news coverage based on content circulating on social media (Guggenheim et al. 2015). The COVID-19 pandemic is a suitable case to study how political and social influences on media content determined how emerging issues were framed.

Consequently, the media has played an undeniably significant role in pressing issues in health matters such as COVID-19. A large body of the content produced by media outlets during this process, as discussed in the analyses below, demonstrates that the news media has covered issues ranging from formal scientific knowledge, medical information directly produced by health professionals, political interventions, and economic results as well as numerical interpretations of cases. In this sense, social dynamics, such as the adaptation of lockdowns, differences in the implementation of political decisions, distinctions between national health systems, and the role of public authorities, have emerged as the basis of the media content during this highly debated process.

3. Materials and Methods

For this study, we have selected *BBC*, *The Guardian*, and *The Times* as popular news sources for the UK and NTV, *Sözcü*, and TRT Haber for Türkiye. This selection is based on their popularity and the diverse set of affiliations these news organizations have with either the government or powerful individuals. The *BBC*, which is the top-visited news website in the UK (Statista 2022), has historically been considered a national institution (Born 2014) dedicated to news objectivity, information inclusivity, and dedication to UK culture and values (BBC n.d.). *The Guardian* is the sixth most widely read news website in the UK (Statista 2022), and while this news organization is often affiliated with the Labour Party (left-wing), the managerial board emphasizes the financial independence of this news outlet and its dedication to centralism and objectivity (The Guardian 2008). Lastly, *The Times* is the sixth most popular newspaper in the UK (YouGov 2018), and it is among the Rupert Murdoch-owned media (Philo et al. 2015, p. 325), which demonstrates this news press’s capitalist corporate affiliations.

As for the Turkish counterparts, NTV is owned by Doğuş Media Group, which belongs to individual entities. Doğuş Media’s values include professionalism and respect for ethical values (Doğuş Group n.d.); however, allegedly, the owners have close affiliations with the current government, especially after the reorganization of Doğuş Media in the aftermath of the unsuccessful coup in 2016 (Aydınli 2019). On the other hand, *Sözcü* is described as an anti-government news outlet with strong adherence to the Republican and Secularism

ideologies (Panayırıcı et al. 2016). Contrary to *Sözcü*, TRT Haber is the most prominent news organization with clear ties with the government. While *Sözcü* is among the top trusted news media in Türkiye, TRT is among the least trusted; nevertheless, TRT Haber enjoys a high percentage of viewership (i.e., Akser and Baybars 2024, p. 10). This selection of news outlets and channels has allowed us to observe how different media with diverse political and social values have represented and paid attention to the four Quadruple Helix actors. Hence, we proceeded with a content analysis of both headlines and keywords within texts of the latest articles published on Mondays of each month by these news broadcasters. The last articles are the ones likely to have the highest readership, as research shows that news websites have the most user traffic early in the morning and late at night (Mitchell et al. 2016). Also, articles published at the end of the day remain on the website's displayed headlines until the next day's updates. Due to the restrictions of the scope of the research requirements for the current publication, it has been essential to minimize the volume of collected data, especially when there are multiple COVID-19-related articles published every day. Therefore, only Mondays' press is taken into account. It is important to note that the timeframe of the chosen articles spans from September 2020 until March 2022.

In this qualitative analysis, a comparative study of the representation of the COVID-19 pandemic by Turkish and UK news media was conducted. The purpose of this study is to elicit the dynamics among different actors of the Quadruple Helix in these two countries, with two different social and political structures during the pandemic. While the Turkish political influence on the media has been described as hybrid authoritarianism (Tunç 2018), the UK media is heavily influenced by neoliberalism, permeating the economic and political structures of this country and the increasing power of corporations (Philo et al. 2015). These two different systems have points of divergence as well as parallels; moreover, the two structures ultimately define the interaction among Quadruple Helix actors within each society. To draw the topography of the comparison between Turkish and UK news media, we carried out a content analysis of news articles published by the two countries' top three mainstream news organizations. Obtained patterns of themes through this analysis should reveal which actor(s) had a voice in social and political spheres.

The rationale behind choosing this timeframe is derived from the fact that the news coverage of the pandemic at its early stages mainly focused on the emergence of the virus from Wuhan, China, its spread to other countries, and the growing rates of infection cases and the subsequent death tolls (Hubner 2021). With the frenzy of an unprecedented worldwide pandemic turning into the daily life reality of 2020, 2021, and 2022, more aspects of COVID-19 and lockdowns' effects started being discussed by the news media. Therefore, more conspicuous patterns of communication between the Quadruple Helix actors could be detected. Moreover, the two-year span of the timeframe compensates for potential biases due to the loss of data because of the trimming down of the large corpus of data available for this research.

This research used eight categories to classify selected news articles: domestic: Social, Domestic: Science, Domestic: Politics, Domestic: Economy, International: Social, International: Science, International: Politics, International: Economy. The two main categories are domestic and international. The domestic category is used for the news that takes place within the country or is about domestic affairs, while the international category is for news related to other countries and news that concerns multiple countries. The subcategories, which are social, science, politics, and economy, are based on their title and what they suggest. The social category consists of news related to society and people. The science category consists of news related to scientific revelations, improvements, and discoveries. The politics category consists of news, which includes political decisions and politicians. The economy category has news related to the economies of countries and the economic states of societies. In the following paragraphs, the newspapers that were analyzed are described in more detail.

For coding the news media articles, a codebook was developed, which clearly defined the categories mentioned. They were tested with the help of two coders who were not

involved in the developing process. The test was applied to two randomly chosen articles from each newspaper in two rounds (N = 24). After the first coding round, the codebook was discussed and revised. The second round of coding revealed a Krippendorff's alpha above 0.8 for all variables (Hayes and Krippendorff 2007).

3.1. *Turkiye*

COVID-19 has affected the social life within *Turkiye* as much as it affected the whole human population. This effect shaped the traditional media as well as the new media of *Turkiye* to move towards a pandemic-centred way of journalism (Madsar and Yıldırım 2021). To understand the dynamic of Turkish news, 287 news articles were analyzed. The news sources selected for the Turkish case are NTV, *Sözcü*, and TRT Haber. Some key time frames were decided for this research, and accordingly, some articles were explained in detail in this section.

3.1.1. NTV

NTV is a Turkish news channel that started broadcasting in 1996. The news channel joined the Doğuş Broadcasting Group in January 1999. NTV pioneered the "news television broadcasting" movement in *Turkiye* with its establishment and identified the faults of the era's Turkish television journalism, creating a space for itself by eliminating the deficiencies that the channel discovered (Çağla Kaya and Akın 2017). NTV broadcasts programs focused on the economy, culture, art, life, sports, and mainly national and international news (NTV 2023). The channel stood by its impartiality policies over the years, even though there were times when it was accused of not being objective. Back in 2010, Doğuş Broadcasting Group's General Manager Cem Aydın gave an interview, emphasizing the unbiasedness of NTV, stating that the channel and its additional media extensions are impartial; however, it did not mean NTV audience satisfaction (NTV 2010). Over the years, NTV has become one of the most known TV channels in *Turkiye* and has received a remarkable number of people as its audience. For this research, news articles published on NTV's website were collected for analysis.

3.1.2. *Sözcü*

Sözcü is a daily newspaper founded in 2007 in Istanbul, *Turkiye*. The newspaper is known for publishing articles that criticize the government from different angles, mostly political. Regardless of its critical ways, the news source became one of the most-read newspapers after 2012 (MedyaTiraj 2016). *Sözcü*'s popularity in the Turkish media did not diminish over time, and the newspaper secured its position as one of the most-read newspapers throughout *Turkiye*. For this research, the news articles from *Sözcü* were taken from its official website. All rights of the articles, news, videos, and photographs published on the official *Sözcü* website belong to Estetik Publishing Company. Since the concern of this research is to gather written news, only news articles from the official *Sözcü* website were taken as data.

3.1.3. TRT Haber

The Turkish Radio and Television Corporation (TRT) is the first and only institution in *Turkiye* that was established by the TRT law enacted on 1 May 1964 and is responsible for public broadcasting. TRT Haber was created under the TRT name and started broadcasting in 2010. TRT is owned by the state, and since this is the case, it is unlikely to find criticisms regarding the government. This is also reflected in the news articles reviewed from the official website of TRT Haber.

3.2. *UK*

To understand the representation of the dynamic between society, politics, economy, and science in the UK media landscape, 249 articles in total were thematically analyzed.

3.2.1. BBC

As the UK's most eminent broadcasting organization, the BBC has a long history in British news media that has not been devoid of political turmoil. Notably, editorial reformations in the 1990s were introduced to the BBC's journalism style to counter Thatcher's political assault on this news organization to make it more subsided towards the neo-liberal agenda of the government (Born 2014). Later in the 2000s, these changes were revised to allow the BBC to take more risks in investigating controversy as opposed to its political subordination of the past decade (Born 2014). Despite these turbulences, as a public broadcaster, the BBC has proven to have effectively prevented the deterioration of the news quality induced by commercial counterparts such as Sky (Cushion and Lewis 2009). Thus, adhering to its title as the national broadcaster, the BBC has constantly set out journalistic guidelines to ensure the quality, relevance, and inclusivity of the news in an evolving media ecology to manifest the democratic values of the UK. In the case of the pandemic coverage, the accumulated articles from the BBC's website demonstrate that scientific topics have dominated the majority of this news broadcaster's coverage of the pandemic, with almost %30 share of all articles in the dataset. The scientific-oriented approach of the BBC shows the dedication of this news channel to upholding its value of 'news relevancy' and acting as the main source of information about the nature of the biological crisis at hand. Naturally, a bigger portion of all the news categories in the BBC's dataset has a domestic context.

3.2.2. The Times

The Times is among the well-established newspaper agencies in the UK, with a long history dating back to the late eighteenth century. The most noticeable characteristic of this news outlet is its "conservative, right-of-centre editorial policy committed to the 'establishment' and the sovereignty of traditional institutions" (Carvalho and Burgess 2005). The particularity of *The Times'* policy visibly demonstrates this newspaper's tendency towards agenda-setting. To better understand the conservative perspective dominating the news framing of *The Times*, it is worth mentioning that, as a part of the Murdoch Press, it follows corporate power and neoliberal ideologies. That is, "there are consistent messages within (Murdoch's) newspapers that, taken together, constitute a coherent ideology" (McKnight 2010). Having that in mind, the themes that *The Times* mainly focused on during the pandemic reveal Quadruple Helix communication through a neoliberal filter. Analysis of *The Times'* dataset demonstrates that scientific voices, especially domestic ones, were the most prominent ones during the pandemic. The second major area of focus was domestic politics, while domestic social issues were also frequently touched upon. Since *The Times* enjoys a "relatively small but well-educated and influential readership" (Carvalho and Burgess 2005), the heavy attention to the scientific topics around the COVID-19 pandemic is tailored to this audience's requirements. Political and social articles better manifest this news organization's stance on the policy-making processes during the pandemic.

3.2.3. The Guardian

Established in 1821, *The Guardian* is among the most prominent liberal news publications in the UK. This news outlet has played an important role in many political and social events of modern history while preserving its claims to its values of "honesty, cleanness (integrity), courage, fairness, a sense of duty to the reader, and a sense of duty to the community" (The Guardian n.d.). For instance, in the case of the Snowden revelations, which can be regarded as a turning point for the relationship between citizens and the political system in the digital era, *The Guardian* performed as a gatekeeper with utmost professionalism. The strategic approach of *The Guardian's* editorial and journalism teams towards stories of these revelations enabled this organization to further establish itself as a leader in digital news coverage on both domestic and international landscapes (Chadwick and Collister 2014). Considering the influential role and the sociopolitical stance of *The Guardian*, the analysis of themes covered by this news outlet during the pandemic reveals interesting insights about the UK's Quadruple Helix dynamic. The most recurring theme of the dataset related

to *The Guardian* was International: Political, with %22 of recurrence among all categories. Meanwhile, among the designated categories, International: Economic had the lowest percentage of coverage.

4. Results

Table 1 provides an overview of the topic dimensions found in the six newspapers from the UK and Turkiye analyzed, which will be discussed in the following chapters.

Table 1. Topic dimensions found in the six newspapers from the UK and Turkiye analyzed.

		UK				Turkiye	
		<i>The Guardian</i>	<i>BBC</i>	<i>The Times</i>	<i>NTV</i>	<i>Sözcü</i>	<i>TRT Haber</i>
Domestic	Science	6	23	29	2	4	2
	Politics	17	22	23	2	6	0
	Economy	3	0	6	0	1	0
	Society	12	21	13	73	47	80
International	Science	11	4	3	16	25	5
	Political	18	5	4	0	2	1
	Economy	1	2	0	0	2	1
	Society	14	5	4	5	8	5
		82	82	82	98	95	94

4.1. Turkiye

4.1.1. NTV

As depicted in Figure 1, it is apparent that the Domestic: Social theme constructs the largest percentage of NTV news articles. Articles on this theme mostly consist of daily COVID-19 numbers in Turkiye. The second distinct theme appears to be International: Science and most of the articles that have this theme are about statements from international scientific sources and health-related news about COVID-19 that emerged from countries other than Turkiye. The third largest percentage belongs to the International: Social theme, and the articles mostly consist of situations that happen in countries outside of Turkiye, indirectly affecting the overall course of events of the COVID-19 pandemic. The other two themes for this specific news source are Domestic: Science and Domestic: Politics, with each theme having two news articles. Domestic: Science news is about statements from Turkiye’s Science Board as well as vaccine news, while Domestic: Politics news is about the Council of Ministers along with people involved in Turkish politics and their involvement in the COVID-19 pandemic.

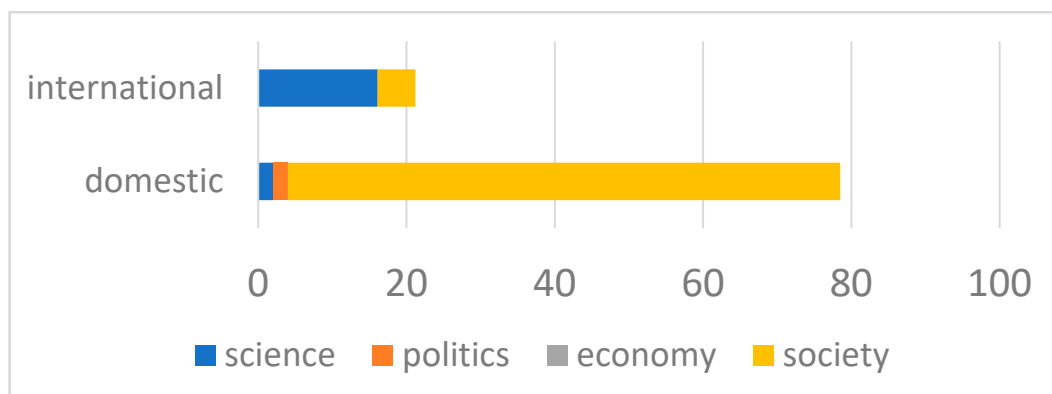


Figure 1. Quadruple Helix patterns in NTV news articles.

Upon closer examination, between September 2020 and October 2020, other than daily COVID-19 news, one article about students who contracted COVID-19 summarizes one of

the main concerns of Turkish society at the time. It provided guidance on what students should do when they understand that they contract COVID-19. Since schools re-opened in Türkiye around the beginning of September 2020, the topic of education became highly relevant, and the news article informs students, as well as their parents or caretakers, on how to act when a situation such as is faced (NTV 2020b). During this time, health and education experts, who have significant roles in decision-making processes, struggled to find viable and effective solutions for the problems of students in Türkiye, similar to the rest of the world. As multiple news articles within the media were fixated on the academic continuity of students, little care was given to the same students when it came to topics related to their mental health and status (Yurttas and Kesik 2022). After the internal problems and questions regarding how the Turkish education system would respond to COVID-19, vaccinations became a topic in Turkish media. Between December 2020 and February 2021, the idea of getting vaccinated was highly supported by the government as well as the Turkish COVID-19 Science Board. In this period, it is understandable to see news that supports COVID-19 vaccines. One article included comments from Uğur Şahin, one of the founders of BioNTech, which rolled out the m-RNA COVID-19 vaccine to the global market (NTV 2020a). In his statements, he gave information not only about COVID-19 but also about the path cancer vaccines and medication will take in the future (2020). By this time, it was also discussed that 2022 would be a year free of COVID-19. NTV provided its readers with WHO's statements regarding the topic of having a COVID-19-free year while giving information about the new mutations of COVID-19. Towards the spring of 2020, news articles started to shift towards the concept of the "new normal". President Erdoğan stated the new normal rules, which included the re-openings of cafes, swimming pools, tourism and leisure facilities, and tea gardens, as well as the removal of travel restrictions (Madsar and Yildirim 2021). Almost a year after the rules of the "new normal" became part of daily life in Türkiye, between April 2021 and May 2021, the world was preparing to get through its second summer season amid COVID-19. During this time, the term "new normal" continued to resonate in Turkish news media. NTV diligently continued to provide information on the "new normal". The article about the Council of Ministers' meeting is one of these instances that provides information to NTV readers about the political enforcements and rules that would reflect the society under the name of the "new normal" (NTV 2021). The normalization processes were communicated to the public through different news sources, but mostly by ministries such as the Ministry of Health and the Ministry of Interior. It was indicated that, after 17 May 2021, strict measures were taken in the fight against the COVID-19 epidemic, and a "gradual normalization" process was carried out in stages. NTV's choice of published news articles aligned with what the Turkish government and its extensions have been suggesting to the public. The news source not only informed people about COVID-19 numbers in the country but also promoted the ideas of the authorities on the pandemic crisis. Throughout the summer and fall seasons, NTV continued to provide daily COVID-19 numbers to its readers. Between October 2021 and November 2021, domestic articles were apparent, which included daily fluctuations in COVID-19 numbers in Türkiye. This period was especially important for the Turkish economy since exchange rates were increasing rapidly, and the Turkish Lira was losing its value. It is understood that during such an economic crisis, NTV was stuck with the social side of COVID-19 and not the economic dysfunctionalities. The economic crises in Türkiye kept on growing as the new years came by, and the news articles shifted their focus to the Omicron variant. According to an NTV article, Turkish President Erdoğan caught COVID-19 with his wife, Emine. Both had been diagnosed with the new Omicron variant of COVID-19, and news sources diligently informed people about their conditions. Between February 2022 and March 2022, news about their conditions continued to appear in the written media. An article was published on NTV about the statements from İbrahim Kalın, the spokesperson for the Presidency of the Republic of Türkiye, about the conditions of President Erdoğan and his wife Emine (NTV 2022). Even though NTV mostly published articles that were not related to political areas, it did not refrain from informing the public

about powerful authority figures. NTV's news articles on COVID-19 are published mostly to inform its readers about the situation in Turkish society in general. Almost all news on social themes provided informative facts on Turkish society during the COVID-19 pandemic. From the point of view of scientific information, the news coverage is mostly international. It can be concluded that NTV focused more on the social side of the pandemic rather than on the scientific, political, or economic sides.

4.1.2. *Sözcü*

Figure 2 reveals that the Domestic: Social theme constructs the largest percentage of *Sözcü* news articles. The articles on this theme mostly consist of daily COVID-19 numbers in Türkiye. The theme that has the second largest portion appears to be International: Science, which is mostly about general health-related news on the COVID-19 pandemic. The third largest percentage belongs to the International: Social theme. The articles on this theme follow a similar understanding and are mostly about events that happened in countries other than Türkiye that affected the course of the COVID-19 pandemic. The fourth theme is Domestic: Politics, which consists of an advertisement for the current Health Minister Koca, along with statements from President Erdoğan and the First Lady. The two themes, International: Politics and International: Economy, have two articles each. International: Politics articles are about enforcement for increasing COVID-19 infection rates as well as political figures of other countries being infected with COVID-19. International: Economy articles focus on the topic of COVID-19 vaccines from different countries. The smallest percentage belongs to the Domestic: Economy theme, and the one article that is present in the data we examined discusses how companies will be affected by the second wave of inflation within Türkiye.

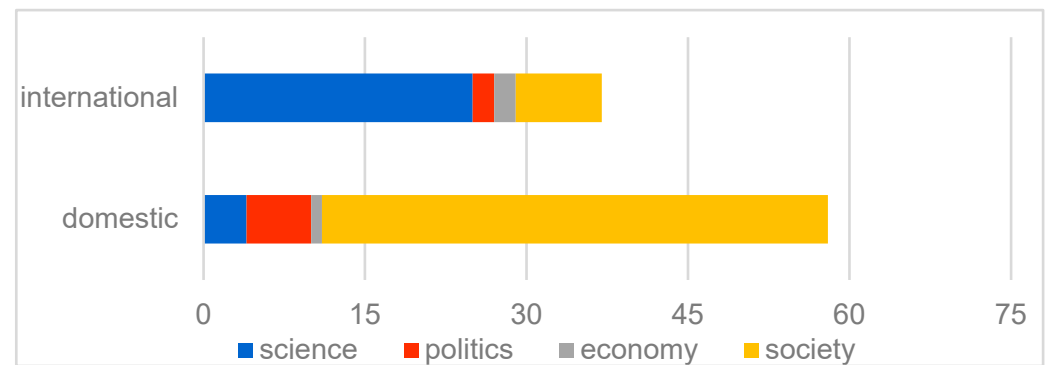


Figure 2. Quadruple Helix patterns in *Sözcü* news articles.

Between September 2020 and October 2020, *Sözcü* mostly published news articles that provided its readers with daily numbers of COVID-19. Within the social and scientific articles that provided various information on the nature of COVID-19, one political and criticizing article stood out. This article pointed out the faulty COVID-19 tables published by the Turkish Ministry of Health as well as Minister Koca ([Sözcü 2020](#)). It is not surprising to coincide with such an article in an opposition media outlet. The press briefing by the Istanbul Medical Chamber stands as a continuation of *Sözcü*'s news article since the chamber's dissatisfaction with Minister Koca was announced in the press briefing (2020). Koca was heavily accused of not giving the correct information about current COVID-19 numbers to the public, which was in accordance with the news article *Sözcü* published. It is an indicator of how *Sözcü* uses its written media instruments to confront the wrongdoings of the current government. *Sözcü*'s critical tone gradually faded with the emergence of new COVID-19 variants, and the focus of articles shifted to be more about the pandemic and its effects throughout the world. One domestic news article that had a criticizing undertone was the one about the funeral of Nuri Genç, a religious education personnel known in the Black Sea region of Türkiye ([Akduman 2021](#)). This article commented on the unwanted

crowd at the specific funeral and criticized the attendance of government officials from the AKP, the governing political party, as well as people from the Directorate of Religious Affairs in Türkiye at the event, disregarding any precautions for the new mutation of COVID-19. When weekend curfews were still in place to prevent the spread of COVID-19, promoting and supporting attendance at a funeral that would attract many people to a single place was not welcomed in *Sözcü*'s stance and structure, and it is the reason why this article stood out in that timeframe. As time went by, normalization became a topic in most countries, including Türkiye. Within the "new variant" panic during this time, *Sözcü* continued to criticize the current Turkish government. Between April 2021 and May 2021, as the world prepared to get through its second summer season with COVID-19 and the first summer with the new variant, news about the decisions of government officials and politicians was apparent in the media. One article that would fit this specification was about the Council of Ministers' meeting. While the indirect disapproval towards the government continued, facts about COVID-19 numbers and the economic importance of the upcoming summer season were discussed (*Sözcü* 2021b). Pointing out the need for new precautions and supervision against the new variant, *Sözcü* suggested it was still early to go back to the "previous normals" of Turkish society. Another article that stood out from the rest was about the pricing of the Russian COVID-19 vaccine, Sputnik Light. This article belonged to the international news category since it provided economy-related information that concerns mostly foreign countries (*Sözcü* 2021c). In a timeframe where there are instabilities of societal impositions and prejudice against COVID-19 vaccines, *Sözcü* appealed to leftists and brought opposing remarks and questions to the government about how they are dealing with the COVID-19 pandemic so far. With the emergence and spread of the new variant, the world was trying to comprehend how to survive the upcoming seasons. Throughout the summer and fall seasons, *Sözcü* provided its readers with daily COVID-19 numbers. While October 2021 was full of domestic news, November 2021 was more blended with international news. The news articles of this time frame mostly consisted of daily COVID-19 numbers as well as detailed information about the COVID-19 situations in various countries. One article stated that Türkiye was in fourth place when it comes to the number of COVID-19 cases of the Delta variant. The press briefing of the Istanbul Medical Chamber seemed to support this specific news article and gave insight into how Türkiye became the third country that has the highest number of daily cases of COVID-19 throughout the world (*Sözcü* 2021a). *Sözcü* cited other news sources about foreign countries as well as Türkiye within this article and predicted how Delta might affect people with the upcoming cold weather conditions around the world.

Until February 2022, *Sözcü* mostly included news articles about promising COVID-19 medications as well as vaccines. There were also society-related news articles regarding the daily COVID-19 numbers in Türkiye. After President Erdoğan and his wife were infected with COVID-19, news on their condition began to arise. *Sözcü* featured an article based on the Turkish First Lady's comments about how she and her husband have been in this illness process (*Sözcü* 2022). By giving positive statements of how their condition was, readers were informed about what Emine Erdoğan posted on her social media accounts regarding their illness. The same article also included similar statements from Kalın, the spokesperson for the Presidency of the Republic of Türkiye.

News articles from *Sözcü* also focused more on society-related news; however, it is also the one news source that had the most politics-related news. With a total number of eight political news articles, it is understood that *Sözcü* aimed to inform its readers by sharing the statements of Turkish politicians, giving information about political decisions made in foreign countries, as well as stating world leaders who got infected with COVID-19.

4.1.3. TRT Haber

Figure 3 shows that the Domestic: Social theme constructs the largest percentage of TRT Haber news articles. The articles on this theme mostly consist of daily COVID-19 numbers in Türkiye. International: Social and International: Science share the same percentage

as the second most apparent themes. Articles that have the International: Social theme mostly include recent news from countries outside of Türkiye. On the other hand, articles that have the International: Science theme include general health-related information about COVID-19. The Domestic: Science theme has articles on the Turkish vaccine along with information about mutated COVID-19 and its effects on Türkiye. International: Politics and International: Economy have only one news article each, and both have the smallest percentage. The International: Politics article is about the Canadian Prime Minister contracting COVID-19 for the second time, while the International: Economy article is about the tourism sector's recovery worldwide.

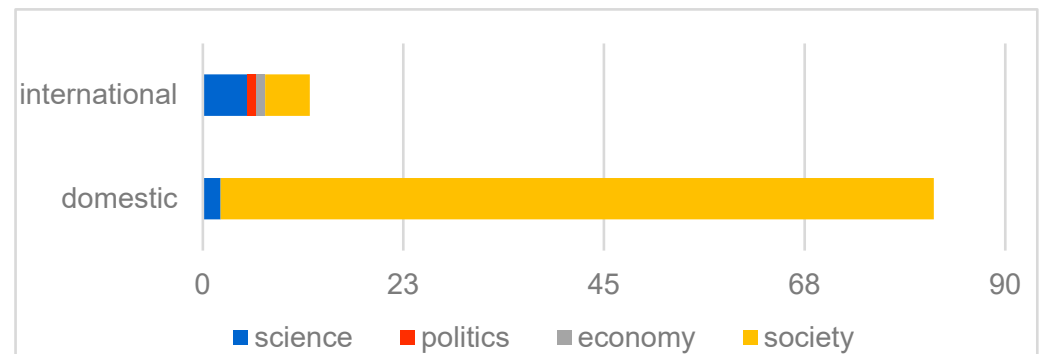


Figure 3. Quadruple Helix patterns in TRT Haber news articles.

TRT Haber, as the other two media sources analyzed so far, mostly gives daily COVID-19 numbers for Türkiye between September 2020 and October 2020. One detail that separates TRT Haber from the rest would be the way it takes on the news during this time frame, particularly by informing people about the decreasing case numbers declared by the Turkish Minister of Health. In his statements, Koca suggested that the number of recoveries from COVID-19 was higher than that of newly infected patients (TRT Haber 2020a). Another article that complements the same theme of Koca's statements is apparent in the same time frame. This article suggests that the number of people who recovered from COVID-19 exceeded 32 million worldwide (TRT Haber 2020b). Both these articles promote hope and positive approaches to the COVID-19 pandemic and are articles that have the potential to affect people with a hopeful demeanour. TRT, as an institution, has been under the influence of the views of the governing political parties in Türkiye for a very lengthy period. TRT has been subjected to various criticisms over the years (Canoruç 2009). However, this coincidental instance is not enough to assume the whole news source altogether. Between December 2020 and February 2021, as new mutations in COVID-19 arose, news on vaccines and mutations started to be frequent. TRT Haber focused on the German medical firm Bayer and their statements about creating a vaccine (TRT Haber 2021a). Along with vaccine news, another article was published about the relationship between the new mutation and the COVID-19 case numbers within Türkiye (TRT Haber 2021b). While the public's views on getting vaccinated varied, many news sources, especially the ones closer to the government, created and published articles that persuaded people to get their COVID-19 vaccines. The pattern of TRT Haber during this period was to provide people with social and scientific insights into the COVID-19 pandemic. In continuing months, similar news patterns continued until the time frame between April 2021 and May 2021. In May 2021, an article suggesting the weekend curfew in Türkiye being completely terminated was released (TRT Haber 2021c). The news article directly summarized the circular of the Ministry of Interior and informed readers accurately on which regulations were valid from then on. Additionally, this article included statements that may give hope to readers and stated that the number of new cases of COVID-19 has started to decline. Once again, TRT Haber supported the decisions of the Turkish government regarding the ongoing COVID-19 crisis. During the same time frame, the news articles mainly focused on domestic news regarding

COVID-19 and Turkish society. However, right after the supposed summer lethargy of people, COVID-19 cases started to rise once again. TRT Haber's readers were not informed about the apparent increase immediately, unlike some other left-leaning news sources, and TRT Haber's news articles continued to support the government's decisions and choices. Between October 2021 and November 2021, domestic and international articles are apparent, including daily fluctuations in general COVID-19 numbers. Articles suggested that domestic death rates had started to increase once again (TRT Haber 2021d). Additionally, the number of cases approached 30 thousand people (TRT Haber 2021e). In the following months of 2022, fluctuating numbers of daily information on COVID-19 were delivered to TRT Haber readers. Between February 2022 and March 2022, this trend kept its place in TRT Haber, and the news site continued to give daily COVID-19 information to its readers. It can be understood that TRT Haber did not take action against the Turkish government, supported their data, and provided explanations with the published news articles. As journalism is a dynamic work field that continues its development under the influence of government policies and technological advancements, TRT Haber proved this definition and acted as the media branch of the current government (Geyik 2021).

TRT Haber is the news source that has the most society-related news within the Turkish news sources that are chosen for this research. Unlike the others, TRT Haber does not constantly provide its readers with science-related news but rather gives information on daily COVID-19 numbers, specifically in Türkiye. Among the three Turkish sources, TRT Haber concerns itself with Turkish society and news about Turkish society's relation with COVID-19.

4.2. UK

4.2.1. *The Guardian*

A closer look at Figure 4 shows that between September 2020 and October 2020, more political topics regarding the pandemic were being covered both internationally and locally. This period is concomitant with the uncertainty over the reopening of social places as well as work and educational places. For instance, Mark Sweney (2020) reports the concern of the Labour Party over the survival of local businesses, such as pubs and restaurants, that were forced to remain closed due to the persistence of lockdown regulations. Indeed, framing this social issue through the perspective of the Tory government's opposition demonstrates *The Guardian's* tendency to challenge the acumen behind the government's decision-making about the lockdown regulations. The frequent presence of international political discourses in the coverage of the pandemic can be mainly attributed to the race between the two Presidential candidates, Biden and Trump, for the 2020 US elections. Namely, in the article "Listen to the Scientists", published on 5 October, Biden asks Trump to support mask-wearing (The Guardian 2020). Further, during the three months from December 2020 to February 2021, with the UK leading mass COVID-19 inoculation, discussions around vaccination issues and the emergence of the new Indian variant were at their peaks. Simultaneously, international social issues in the light of the persistence of lockdowns received significant news attention, among which citizens' displeasure with lockdowns in Los Angeles (Levin and Singh 2020) can be highlighted. This demonstrates that with the promise of COVID-19 jabs, social problems of long lockdowns started emerging at the forefront of media discussions during the pandemic. Concurrently, there is a rise in the number of scientific articles as it is the second most covered category during and after the festive period that provides the scientific point of view on the new COVID variant (Glenza 2021; Davis 2021). The emphasis on the scientific aspect of the new variant can be attributed to both the novelty of the new viral disease, which requires scientists as the leading source of information (Shih et al. 2011), and a cautionary strategy against sudden ease of pandemic regulations following the distribution of vaccines.

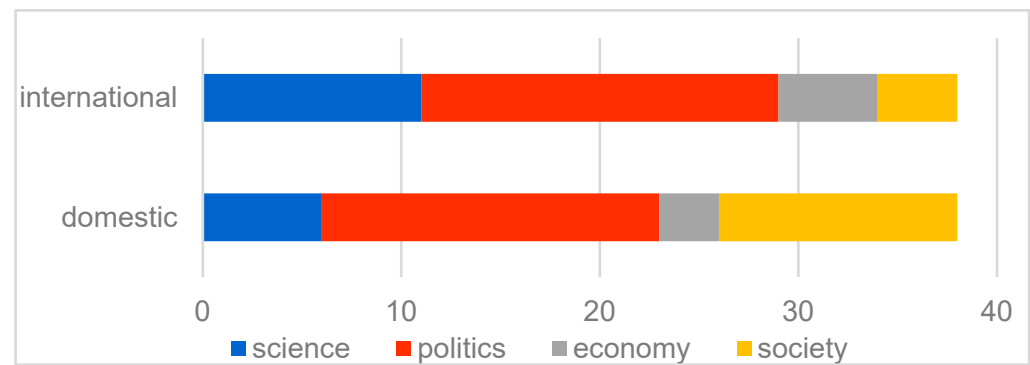


Figure 4. Quadruple Helix patterns in *The Guardian* news articles.

The time frame between April 2021 and May 2021 marks the first time long winter lockdowns were lifted in the UK. Again, there was a sharp increase in political discussions that can be considered complementary to each other; for instance, the lack of clarity on travel restrictions in the UK (Campbell et al. 2021) is in line with the promises of politicians to make vaccines accessible globally (Greve 2021) since travel restrictions significantly depended on the vaccination rates globally. Notably, as opposed to the two previously examined key events, this was the first time there was also a glance at economic topics (Jones 2021) within the pandemic communication, which manifests the important role the economic pressure of the lockdowns played in the decision of easing the restrictions. In the second autumn of the pandemic, September 2021–November 2021, an amalgamation of political and economic topics was widely explored by *The Guardian*, ranging from the international spread of Omicron, the rising inflation rate in the aftermath of Brexit, and the pandemic restrictions (Partington 2021) and Johnson’s failure to conform with the masks regulations (Allegretti 2021). The highly critical standpoint of *The Guardian* speaks of the increasing cynicism towards Johnson’s leadership during the pandemic. With a significant dip in COVID-19 mortalities in February 2022, the relaxation of many COVID regulations, including travel restrictions, started being lifted, and by the end of March 2022, almost no pandemic restrictions were in place. With the ease of the restrictions, *The Guardian*’s newsroom attention was attracted to more social debates, such as the controversy over the inclusion of the unvaccinated in social life (Anguiano 2022). With all the talks about ‘back to normal’, discussions about the aftermath of two years of living under the COVID-19 pandemic denote the transition of the social life’s ‘normal’.

4.2.2. BBC

During September and October 2020, Domestic: Social and Domestic: Scientific topics equally enjoyed the highest percentages of coverage (Figure 5). The majority of these articles revolve around debates over the reopening of public life, such as reports about the rising cases among students posing a threat to the student community (BBC 2020a), complemented with scientific findings about ways of the spread of the virus (BBC 2020b). These topics put the government’s policymaking under scrutiny. Therefore, the BBC adopts a balanced approach towards the issues of the time also by including government voices, such as Matt Hancock’s, about concerns for the well-being of students (Rosney 2020), given that the reopening of public life consisted of social, public health, economic, and political concerns. Moreover, during the rollout of the vaccination plan in the winter of 2020 and continuing into February 2021, again, social and scientific discussions with a domestic theme were more prevalent. Specifically, there is a considerable amount of scientific content about new COVID variants and different COVID vaccines, such as the Oxford vaccine (BBC 2020b, 2021b), in the dataset. Meanwhile, the increase in the number of published articles within the UK’s political context during this time is worth paying attention to. For example, the article expressing Johnson’s positive outlook towards the possibility of

summer holidays (BBC 2021d) indicates the government's early plans to ease restrictions for the summertime holidays to avoid the previous year's economic loss in the tourism sector.

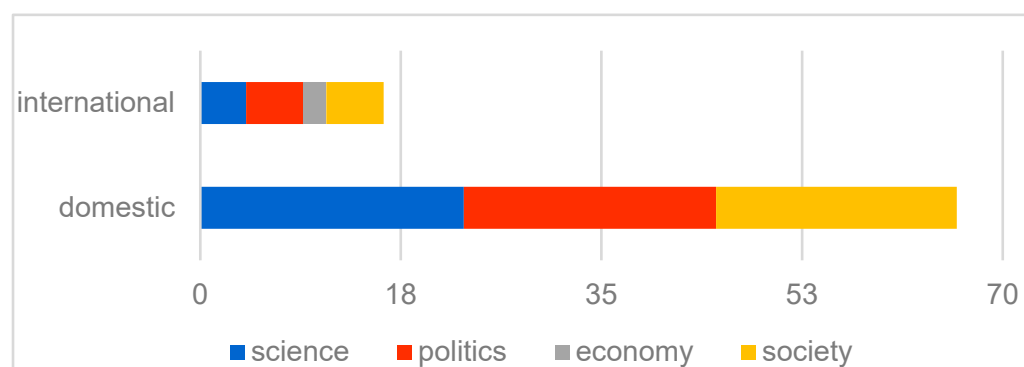


Figure 5. Quadruple Helix patterns in BBC news articles.

Towards the spring of 2021, especially between the months of April and May, the bulk of the data consists of scientific articles. It is possible to label the news coverage from this time paradoxical; while concerns from scientists about the third wave were reported (BBC 2021c), the transition of the UK's alert level from four to three was explained as being based on the advice of experts (BBC 2021f). The observed dualism can be attributed to uncertainties over the full effect of the vaccines and the possibility of the emergence of new COVID variants with unknown infectious rates. This is another demonstration of the BBC's dedication to news inclusivity by providing the full picture of events and oppositional opinions. Further, the rapid growth in inflation rates peaking in October and November 2021 coincided with the spread of the new Omicron variant. Hence, social and economic matters were brought into the limelight, especially with scientists' commentary. People discarding almost all COVID rules and advice, as a result of what is described as COVID fatigue, became a topic of concern for experts (BBC 2021e), while death tolls around the world reached an all-time high record of over five million (BBC 2021a). During this period, the BBC paid attention to the conflict of interests between society and the scientists surfacing. When the scientific community still advised caution, citizens demanded tangible effects of vaccinations on their public life. Approaching March 2022, the BBC's focus shifted towards social topics, including Vaccine Passport requirements for social activities (BBC 2022b), news about the Duchess of Cornwall contracting coronavirus (BBC 2022a), and how vaccinations allowed the risky groups to return to their social lives (Gallagher 2022). Noting that between February and March of 2022, almost all COVID-19 restrictions came to an end, the BBC initiated a more extensive reportage of the society's 'new normal' and citizens' stories.

4.2.3. The Times

In the Fall of 2020, the UK's political topics dominated *The Times*' news coverage of the pandemic (Figure 6). The majority of articles during that date focused on discussions about the restrictions in place. Some of them even have a mocking tone, for instance, in the article titled "No birthday parties but you can shoot grouse under 'rule of six' exemptions" (Smyth 2020). Scientific pieces also constituted a significant portion of the news coverage. Notably, these articles anecdote scientists declaring their concern that the population was not ready for full lockdowns (McLaughlin 2020). The juxtaposition of articles from political and scientific viewpoints that both problematize the severity of the pandemic restrictions clearly manifests *The Times*' stance against these policies, and this newspaper does not hesitate to legitimizing its own opinion on the matter through a one-sided representation. Towards the rollout of mass vaccinations, scientific topics dominated the gathered dataset of this news agency. Naturally, most of these pieces included scientists illustrating facts and presenting cautionary tales about vaccines. For instance, an article about the distribution of

Pfizer vaccines to “English care homes” (Whipple and Yeomans 2020) showed a picture of an elderly laughing in-home care. This choice of picture sets a positive tone for this article by drawing implications about the Pfizer vaccine as a hero of the elderly. Even though this article acknowledged “some international scepticism about the speed with which Britain approved the Pfizer-BioNtech vaccine” (Whipple and Yeomans 2020), this article aims to persuade readers to accept this news as a positive. Noting that Murdoch received his COVID-19 vaccine around the same time in the UK (Bland 2020), the same trend of personal agenda-driven journalism in *The Times* is revealed.

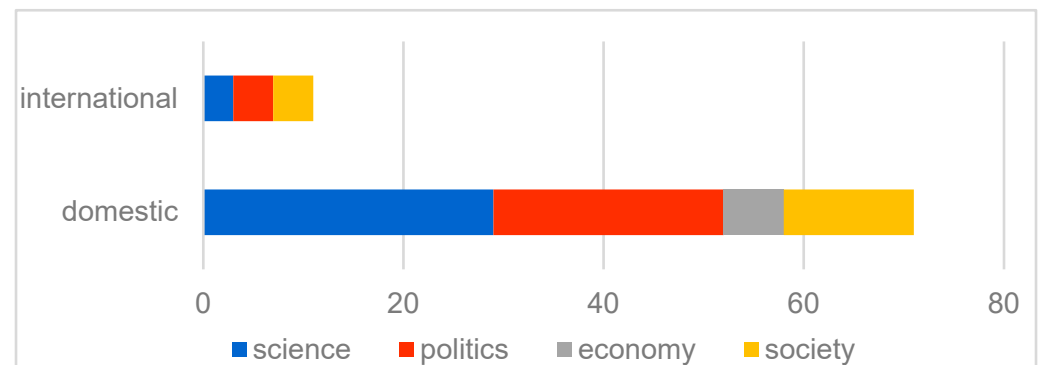


Figure 6. Quadruple Helix patterns in *The Times* news articles.

During the Spring of 2021, the percentage of scientific news had the highest ratio after social topics. There was a continuation of attention on COVID-19 vaccines collocated with news of a decrease in the number of COVID-19 cases. Meanwhile, there was also a reemergence of economic topics about the upcoming travel season and the urgency of expanding the “green list” (Paton and Mitib 2021). The scientific underpinning of the news of vaccines’ effectiveness contributed to warranting the relaxation of travel restrictions in the summer. Further, during October and November 2021, when the inflation peaked and the Omicron variant started spreading, *The Times* devoted the same amount of significant recognition to social discussions as well as scientific ones. This is owing to the growing social unrest due to the re-establishment of COVID restrictions internationally (Rose 2021) and the growing number of anti-vaxxer movements targeting media gatekeepers (Knowles 2021). Hence, with the continuation of the pandemic and the resulting inflation in the second year, which is giving rise to growing social turmoil, *The Times* criticizes COVID restrictions from a social perspective. Finally, with the gradual abandonment of COVID restrictions until March 2022, scientific and political themes prevail over the bulk of the dataset. Conflicting views of politicians and scientists were brought forth with the instance of Secretary of State for Health, Sajid Javid, describing the rise in cases in the UK as “modest” and not worthy of action, while scientists warned against the complete abolishment of the restrictions (Smyth 2022). *The Times’* critical stance towards the government’s decision to reopen social life is contradictory with this new outlet’s previous criticism of past restrictions. Indeed, this paradoxical undertone of pandemic news coverage shows *The Times’* adherence to following the Murdoch Press’ unique agenda rather than being in line with the State.

5. Discussion

In total, 533 news articles were analyzed in this research, with 287 Turkish news articles and 246 English articles. As each news outlet’s priority of news article topics varies for the two countries, it can be said that the least importance is given to economy-related topics during this period by all six news sources. In all domestic and international categories remaining, except for the economic ones, the importance a news outlet gave to a topic showed variety. For instance, when the *BBC* has more news articles about Domestic:

Science, TRT Haber has more news on Domestic: Social. Detailed information about each news outlet is given in the continuing paragraphs.

Out of 287 Turkish news articles that have been included in this research, two hundred belong to Domestic: Social, eight belong to Domestic: Science, eight belong to Domestic: Politics, one belongs to Domestic: Economy, eighteen belong to International: Social, forty-six belong to International: Science, three belong to International: Politics, and three belong to International: Economy. The most important is given to the Domestic: Social, while the second is the International: Science and the third is the International: Social. It can be understood that as the number of domestic topics is very high, the following topics are highly related to the international dimension of COVID-19.

Most news is about daily COVID-19 numbers in Turkey, stating the numbers of infected people, death rates, and cured patients. Having more society-related news is a common pattern in all three news sources we have analyzed. NTV, *Sözcü*, and TRT Haber all focused on giving societal information and prioritized putting out daily COVID-19 numbers in Turkey. In terms of science-related news, domestic news is visibly less than international news. It can be understood that scientific information that is based outside of Turkey has a greater impact on readers than domestic scientific news. That is why, even though the topic of science is the second most common theme of Turkish news articles, information based on foreign sources was shared with the public the most. The scientific news mostly consisted of health-related topics involving COVID-19 and was sourced from mostly Germany, the US, and England. Turkish sources mostly consisted of vaccine-related news, while others had comprehensive scientific information that looked at situations from different angles. In terms of politics-related news, mostly domestic news articles are apparent. In terms of domestic news, since decision-making processes regarding COVID-19 have political procedures, news sources inform their readers about statements made by Turkish politicians. Even though not much importance is given to the political topics in the selected period for this research, most political posts refer to domestic relations rather than international news.

Out of the 249 English news articles included in this research, 46 belong to Domestic: Social, 58 belong to Domestic: Science, 62 belong to Domestic: Politics, 9 belong to Domestic: Economy, 23 belong to International: Social, 18 belong to International: Science, 31 belong to International: Politics, and two belong to International: Economy. The most importance is given to the Domestic: Politics, while the second is the Domestic: Science, and the third is the Domestic: Social categories. All these three categories are under the domestic headline, meaning the internal conversation on COVID-19 was more important than other topics for UK readers.

Having a higher number of political news reports in UK media shows that political issues or concerns were stated or answered even during the COVID-19 pandemic. As the UK's political figures made various statements, some about fighting against the COVID-19 pandemic and some about calling out other politicians, news outlets shared these authority figures' demands from their society as well as other world leaders. Science-related news, especially from domestic sources, was released to give people the recent news on the COVID-19 situation from a scientific point of view. Most articles related to science are about WHO's statements, COVID-19 risk groups, death rates, and vaccine-related news. The social side of the pandemic was also very high in demand during the pandemic period; however, as it held importance for UK society, it was less likely to have a society-related news article topic for the three news outlets in this research. Most news in the social categories consists of anti-vaccine protests, conditions in schools and for students, and general changes in UK society. This news also included comments, wishes, or actions from celebrities, as well as the royal family's members.

This research shows two different countries' tendencies and values assigned to different elements within the Quadruple Helix model. Turkey and the UK have different political and media systems, societal structures, scientific developments, and, last but not least, economic levels, which affected the media outlets of each country to have fitting news content,

especially during the fearful and confusing pandemic period between September 2020 and March 2022, the time interval considered for this research. One of the significant findings is that Turkish pro-governmental and oppositional newspapers report on COVID-19 more in a social-societal context rather than a political one. This suggests that in media systems with strong characteristics of political parallelism, the topic is obviously neither suitable for a political reckoning with the government nor for enhancing the government's reputation among the population. However, although the UK's media system is also shaped by "party-press parallelism", political discourse in newspapers is significantly higher than in Türkiye. The reason for these differences needs further investigation into the discursive media cultures of these countries. As the results of this research can be interpreted in various ways, the perception of this paper is that all the news articles analyzed from the six chosen news outlets have reflected what their readers needed to learn.

6. Conclusions

Within the scope of this paper, six newspapers from Türkiye and the UK were analyzed according to the Quadruple Helix dimensions of science, politics, economy, and society during the period from September 2020 to March 2022. From each newspaper, a content analysis was conducted on the latest articles published on Mondays each month, focusing on both headlines and keywords within the texts. The Monday issues were analyzed since it could be assumed that they have the highest readership, according to [Mitchell et al. \(2016\)](#). Additionally, articles published at the end of the day remain displayed on the website's headlines until the next day's updates. The Quadruple Helix model proposed by [Carayannis et al. \(2012\)](#) describes that for sustainable innovation processes, the knowledge exchange between the systems of science, politics, economy, and the media-based and culture-based public have to be considered. A pandemic, in general, is a health crisis that needs sustainable innovations to combat societal threats, which justifies the usage of the model in the case of the COVID-19 pandemic. According to [Luhmann \(1996, p. 10\)](#), the media are part of the public system, which is constitutive of the reality of the public. Accordingly, media agents have an impact on the processes of knowledge production within the media-based and culture-based public systems.

The analysis of newspapers in Türkiye and the UK contributed, on the one hand, to a better understanding of to which extent and how the media in the two different cultures and political systems construct knowledge in the public system about the systems of science, politics, the economy, and the public itself. The Turkish newspapers analyzed were dominated by domestic and international topics, as well as international scientific issues. Domestic political topics played a significant role only in the newspaper *Sözcü*, which tends to report critically on the government. However, in the UK, domestic science is covered by the newspapers and analyzed with a much higher significance than in Turkey. This can be interpreted as differences in the self-conception of national scientific performances in the two countries based on the results achieved in the context of COVID-19 research.

However, except for *The Guardian*, the number of domestic news rather than coverages about international topics is much higher in both countries. Therefore, the knowledge about the pandemic communicated by the media is almost limited to national and local levels. This may have two reasons: On the one hand, it reflects the public interest in private concerns about health, the private economy, the education of children, and domestic violence against vulnerable groups of society (cf. [Güneş Peschke et al. 2023](#)). On the other hand, it could be understood within the scope of this paper that national statistics on infected people, mortality rates, and the availability and penetration of vaccines in society play a dominant role in press coverage. Consequently, although the pandemic is a global issue, it is dominantly negotiated on the national rather than global level.

But, there are limitations to the research within the scope of this paper. This paper focused on the quality of news coverage in six newspapers and considered certain aspects of the media systems in Türkiye and the UK. The authors understood the media as part of the media-based and culture-based public system. However, within the scope of this

research, aspects of the audiences and readers were not directly considered. The based dataset did not allow detailed information about that. But the findings will help design further research on this topic. Furthermore, although this paper could contribute to a better understanding of the Quadruple Helix pattern across six different newspapers in Türkiye and the UK, which enabled the comparative understanding of media impact on the knowledge production in the media-based and culture-based public systems, there is no information about the relevance of these Quadruple Helix patterns for the construction of public reality. Given that a significant part of the media-based public is an active producer of content on social media platforms, the interaction between journalistic, citizen journalistic, and common user-generated content has to be analyzed; for instance, through the analysis of comments, forwarded content, and discourses initiated by the media content has to be deeper analyzed. However, the findings presented in this paper enable further comparative content analysis within the scope of sustainability research beyond the pandemic.

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