When Bt Brinjal Became a Political Hot Potato! Media Framing of the Genetically-Modified Food Controversy

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Abstract. Genetically-Modified Food (GMF) crops have become one of the most controversial topics across the globe. Following a public outcry, a moratorium was announced in India on commercial cultivation of GM food crops in the year 2010. The present study attempts to examine the coverage of GM Food debate in two English and two Telugu daily newspapers from 2008 to 2012, that is, for a period of five years. What frames dominated the newspaper coverage, which stakeholders had better access and what was the tone of the GM debate are the main research questions that this paper tries to address. Frame analysis method was used to analyse newspaper content. All articles that dealt with GM Food issues were searched manually for the selected period. The search yielded a total of 343 articles. The results indicate that media coverage was largely carried with an anti-GM tone in all the selected four newspapers for the period of study. University scientists and representatives from NGOs had better access to the print media than other stakeholders in all the newspapers throughout the debate. The 'public accountability' followed by 'food security' frame dominated the entire media coverage in both English and Telugu newspapers. The GM debate got sparsely framed as an ethical and labelling issue during this period.

Keywords. *GM Food, science and media, media framing, journalism, print media, newspapers, media conflict*

Introduction

The ministry of environment of India gave approval to cultivation of Bt brinjal in the country on 14th Oct 2009 which created a huge controversy on the topic. This was followed by coverage of a series of consultations led by the then environment minister on GM (Genetically-Modified) foods. The media coverage reached its peaks during this period and continued till the government announced moratorium on 10th Feb 2010. The debate was at its peak during the first four months i.e. from November 2009 to February 2010 and it lost its intensity after that. The coverage started slowly declining in the final phase of the debate with an exception in October 2012. In October 2012, an international conference in the country (held at Hyderabad, India) again raised the issue in the media.

Environmentalists and activists were at a debate with scientists, seed company representatives and policymakers over the GM crop issue across India. Even within the scientific community, there was no consensus on this issue. Environmentalists demanded for a moratorium on GM crop research and on the commercial release of GM foods into the country. On the other hand, industries associated with GM technology and some of the scientists in the country have been stressing that the future of Indian agriculture lies in biotechnology and appealed to the government to give a nod to GM crop cultivation.

The controversy associated with GM is unique in the sense that it has to do with the food daily consumed by individuals. A wrong or inaccurate decision over it may lead to colossal consequences which cannot be undone or reverted. In this context, how the media frames the debate and how the notion of risks and benefits associated with GM foods get constructed becomes an important arena to be studied. The notion of risks associated with GM technology is not only the reason for opposition against it. Food being an important part of culture, modification of genes is also seen as modification in the culture. Certain religious groups have also been arguing that modification at gene level is the same as playing God. Some social activists expressed high concerns over the economic and social impact of this technology on the farming community and on agricultural land. Thus, GM technology has reached a stage where it seems that its fate cannot be decided within laboratories alone. It has reached a stage where its cultivation and adaptation is at the discretion of policy matters which in turn depends on the consciousness of the general public at large. This doesn't mean to say that scientists' have lost their prominence completely, but to say that other social groups have started to play an active and decisive role in scientific controversies.

Previous studies

Numerous studies have reported the importance of the media as a prime source of information for the general public on science and technology issues. Research shows that consumers essentially learn about biotechnology from the media and particularly from newspapers (Hallman & Metcalf, 1994; Hoban, 1998; Priest, 2002). Nucci and Kubey (2007) stress that the media sets boundaries of a debate by framing scientific problems and influencing public

perceptions of risks and benefits. In a study on the media representation of various stakeholders in the UK, Augoustinos et al., (2010) found that British public was mainly represented as uniformly opposite to GM crops and British government was presented as highly undemocratic. In the last two decades, several scholars have published articles on newspaper content analysis of GM crops in Ireland (Morris & Adley, 2001), the UK (Durant & Lindsey, 2000; Cook et al., 2006; Marks et al., 2007; Augoustinos et al., 2010), India (Sivakumar, 2004), Germany (Kohring & Matthes, 2002), Japan (Hibino & Nagata, 2006; Shineha et al., 2008), USA (Crawley, 2007; Marks et al., 2007) and Greece (Kehagia & Chrysochou, 2007). Most of these studies were carried out in the context of the developed world with one or two exceptions.

Panos institute (Masood, 2005) conducted a massive analysis of print media coverage of the GM debate in five developing countries – India, Brazil, Thailand, Kenya and Zambia between January and June 2004. The study was carried on newspaper and magazine coverage of GMOs (Genetically-Modified Organisms) in each country. Number of articles published on the issue in each country was counted and analyzed along with analyzing the frequency of main sources cited in the coverage. Number of editorials and opinion articles published on GM topics were recorded in the study. Articles which favored GM and that opposed it were also noted down. The current study focuses on the nature of GM food coverage in Indian print media. The main frames employed, and the tone of coverage in the Indian context is critically studied here. As most of the previous studies were carried in developed nations, this paper tries to present a view on coverage of GM Food from a developing country perspective.

Theoretical framework

Framing Theory developed by Erwin Goffman (1974) and Robert Entman (1993) is the theoretical framework for the current study. Framing is now widely used to analyse media content in academic research. Framing as a theoretical approach is useful in understanding the factors that influence media coverage, principles that dominate public debate, and in finding out the elements that impact public policy (Entman 1993; Gitlin, 2003; Goffman 1974; Reese et al., 2001; Tuchman, 1978). McCombs and Shaw (1972) have stressed on the agenda setting function of the media. For them, the media may not direct the public what to think, but it directs the public on what to think about an issue. By strategically choosing what issues to report, which voices are to be reported and by determining salience to be given to news stories, newspaper editors and journalists can frame an issue and thus become an important site for contestation for various stakeholders in the debate.

Research on media coverage of agribiotechnology shows that media coverage of an issue significantly shapes the discourse on it. Several studies in the west (mainly in the US and European context) stressed out that the choice of sources in the media has a significant impact on the formation of public opinion about emerging technologies. Little research exists in the Indian content that examines the role of sources in shaping the GM food debate in the media.

Media journalists can decide and define what constitutes expertise and who is an expert in a given field. Journalists, in order to stick to the journalistic norm of balancing, often tend to present more than one side of a story. They usually look for more than a single source while covering a news story. Which sources need to be prioritised and which needs to be downplayed often rests at the discretion of individual journalists. Journalists frequently choose their own headlines and thus have the power to frame an issue. Use of popular connotations, metaphors and visual images also empowers journalists to frame a story to a great extent. Through editorials newspapers express their opinion towards a technology and provide a critical evaluation of technology under debate.

The paper seeks to understand how news sources influence the reportage of the GM debate and the possible implications of it on the policy making process. This paper traces how a scientific controversy reaches out to the public via media and explores the relationship between media and science and technology communication in general with the help of the GMF case.

Objectives

Objectives of the study were to
- Sketch out the nature of coverage of the GMF issue.
- Assess the power of different stakeholders in accessing media.
- Trace out the frames in the media coverage of GMF controversy.
- Evaluate tone of coverage of GM Foods in media reporting.

Method

Content analysis has been the traditional way of analyzing the media coverage of any issue. But in recent times, frame analysis (which goes beyond mere content analysis) has gained much importance in media research. According to Entman (1993) "to frame is to select some aspects of perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation". Framing or frame analysis is found to be extremely useful in critically looking at media content. It has become a potential tool to examine social construction of reality in general and social construction of risks in particular. Several studies (Nisbet & Lewenstein 2002; Priest & Ten Eyck, 2003; Lewison, 2007) have applied frame theory to analyze media coverage of biotechnology in print media. Even though framing has its own limitations, understanding of frames helps in illuminating many empirical and normative controversies as the concept of framing directs our attention to the details of how a communicated text exerts its power. The current research explores how four Indian daily newspapers (two English and two Telugu newspapers) reported the GM debate from 2008 to 2012. It examines whether newspapers have reported diversity of opinions on the GM debate. In particular, the research focuses on which news sources had better access to the media in the debate in Indian context.

Unit of analysis and time frame

A single complete newspaper article is considered as a unit of analysis for the research paper. Each article collected is thoroughly analyzed both quantitatively and qualitatively using frame analysis. Content in media can be analyzed both qualitatively and quantitatively using frame analysis. Quantitative content analysis focuses on space, location and frequency devoted to content. Qualitative frame analysis focuses on themes, orientation, visuals and tone used.

The news media uses various frame factors such as keywords, and visual images in combination with frame methods such as repetitions, tones, orientations, and frequencies to report an article. Newspaper articles in English (The Hindu and The Times of India) and Telugu (Eenadu and Andhra Jyothi) dailies from the year 2008 to 2012 i.e. for a total of five years have been selected for collecting data.

Data collection

The first stage of data collection was to manually search for articles on GM Foods in selected four newspapers. The population of articles searched was enough to capture wide-ranging discourses on GM foods in the country. For the current research study, the study population was defined as all the articles (n=343) published on GM Foods in selected four newspapers for a period of five years in Indian print media. All articles dealing with GM Foods published in The Hindu, The Times of India, Eenadu and Andhra Jyothi daily newspapers between January 2008 and December 2012 were collected to analyze the coverage of the GM Food debate with a particular focus on media coverage of Bt Brinjal crop.

All the articles pertaining to GM Foods were exhaustively gathered for the study. The initial search carried out yielded a total of 371 newspaper articles. The collected articles were read to check the relevance of the story. Of the 371 articles, 28 articles were dropped from further analysis as they just made a passing reference to the issue under investigation. Thus a total of 343 articles were only retained for the study.   Only news stories that directly dealt with GMF in one way or the other were considered for further data analysis. For this research, the main source was identified by using the name of the source and name of the organization of the source as cited in the newspaper article. Sources were grouped into several categories in order to draw connections and to make the data more quantifiable.

Framing typology for the current study

Using previous research as a basis, researchers identified and coded the dominant frame in each article and analyzed the tone of coverage, construction of risks and the main sources cited in the text. An article usually contains more than a single frame and rarely uses a single frame to convey a story. A single newspaper article generally invokes several frames to report a newspaper story. Dominant frame for this research is defined as the frame which captures the essence/central theme of the newspaper article. So, not all frames have been analyzed here in the study. Only the dominant frame was noted down for the current study. Many previous

studies of framing in news reports have employed a method of categorization which assigns a dominant frame to a news article or news lead. In actuality, a single news article generally has several frames while covering an issue and thus reflects the complexity of issue cultures.

Newspaper articles typically reflect a basic tenet of journalism as practiced in the United States: to offer more than one perspective within a single news article. Frames that emerge after numerous careful readings are documented with representative examples with a given frame. This method offers a richer understanding of how frames are constructed around the issue of Genetically-Modified foods in newspaper articles. Researchers adapted the frame definitions used by Botelho & Kurtz (2008) and built upon them for current study. This allowed the researcher to structure the content in an organized manner. Thus, frame analysis of newspaper content gave researchers an excellent insight into the workings of the media.

12 issue specific frames from Botelho and Kurtz (2008) study were used as a starting point of departure for the current study. Botelho and Kurtz carried frame analysis on GM Foods in US context and found 12 issue specific frames to be associated with GMF coverage. They primarily used the 8 frames developed in earlier studies. Issue specific frames were used rather than generic frames in the study. Using the 12 frames, the entire population of articles collected was then coded into the different frame categories. And all the articles that didn't fit into the twelve frames were marked as new. They were further analyzed to detect new frames in the coverage and the study discovered one additional frame category: public awareness along with earlier 12 frame categories. Newspaper articles that didn't fall under the 13 frame categories were marked as 'other' frames. Along with coding for frames, articles were also coded for the following category of variables: newspaper name, section, type, tone, authorship, principal prompt, sources quoted, type of risks, blame assigned, position towards risks. The coding sheet used for the study is provided at the end of the thesis. The headlines of articles were also coded for tone (positive, negative or neutral). The data from each coding sheet was entered onto a Microsoft Excel Sheet for further quantitative analysis.
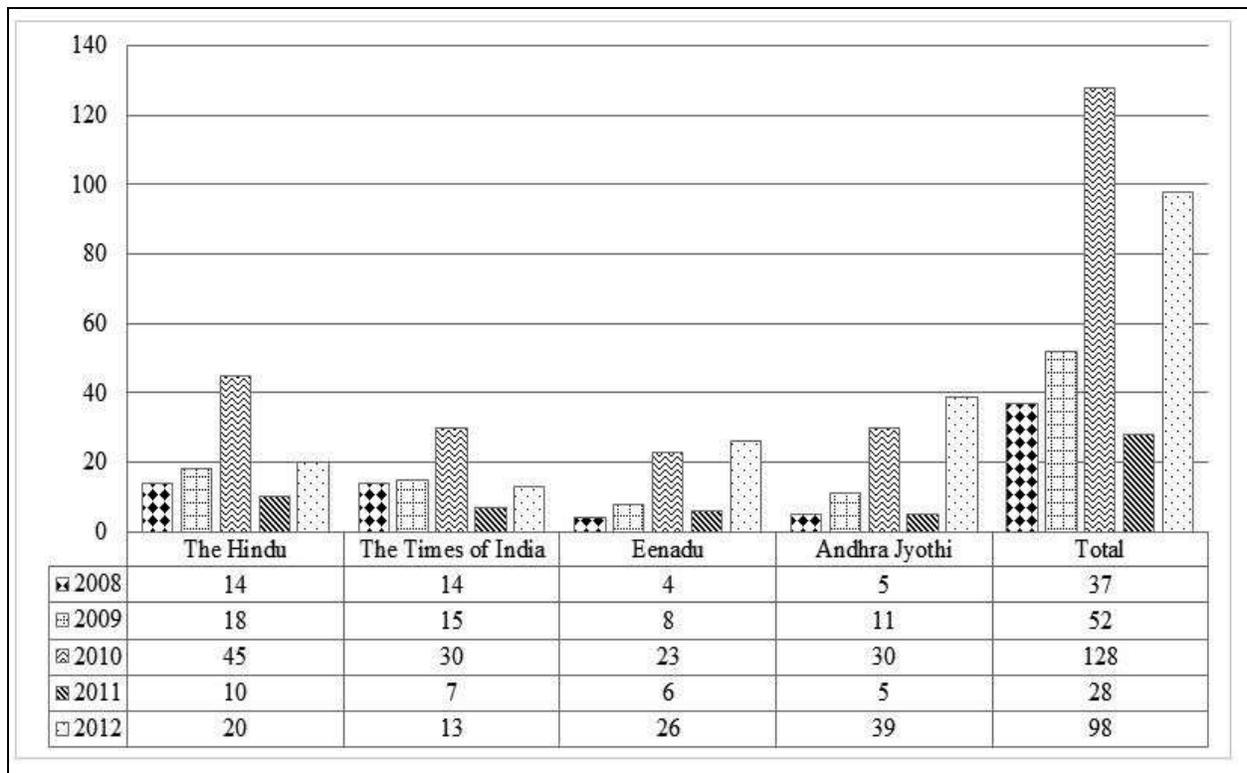
Major findings of the study

Frequency of coverage of GM food controversy from 2008 to 2012

Figure 1 shows the number of articles published on GM foods from 2008 to 2012 by each individual newspaper and all newspapers combined together. Of the 343 total articles analyzed, The Hindu has given more coverage to the debate with 107 (31 percent) articles, followed by Andhra Jyothi newspaper with 90 (26.2 percent) articles. The Times of India published 79 (23 percent) articles while Eenadu published 67 (19 percent) articles that focused its attention on the GM debate. Across all newspapers, maximum numbers of articles were published in the year 2010 and coverage was very low in 2011. Of the 343 articles, the most articles, 128 articles (37 percent) appeared in the year 2010. The year 2012 was second with 98 articles (29 percent). Coverage was low in 2011 with just 28 articles (8 percent). The coverage was at its peak after the GEAC (Genetic Engineering Approvals Committee) gave approval for the commercial

cultivation of Bt Brinjal crop in the country i.e. February, 2010. There was a strong dissent across the country from the protest groups which ultimately led the government to carry consultation meetings in major brinjal cultivation states of the country. The media coverage was intensive during this period with 86 articles (around 25 percent of total articles) of the entire coverage appearing in just a span of four months.

Figure 1: Frequency of coverage of GM food controversy from 2008 to 2012 by newspaper

	The Hindu	The Times of India	Eenadu	Andhra Jyothi	Total
2008	14	14	4	5	37
2009	18	15	8	11	52
2010	45	30	23	30	128
2011	10	7	6	5	28
2012	20	13	26	39	98

The coverage across all the four newspapers was highest in the year 2010 and was lowest in the year 2011. However, there was an increase in coverage the following year i.e. 2012. The international Biodiversity Summit held in India focused its attention on biodiversity and on genetically engineered crops. This attracted media attention across all the newspapers in October, 2012 and articles that dealt with GM food controversy received significant coverage during this period. The frequency of coverage in The Times of India newspaper was notably lower than that of The Hindu newspaper. Eenadu newspaper published less number of articles on GM food controversy than Andhra Jyothi newspaper in general.

Table 1. Number and type of article by newspaper

Type of article	TH (N=107)	TI (N=79)	EE (N=67)	AJ (N=90)	Total (N=343)
Editorial	5 (4.6%)	8 (10.1%)	5 (7.5%)	5 (5.5%)	23 (6.7%)
Science/general feature	6 (5.6%)	4 (5%)	3 (4.4%)	4 (4.4%)	17 (4.9%)
Interview	4 (3.7%)	1 (1.2%)	4 (5.9%)	7 (7.7%)	16 (4.6%)
General news	83 (77.5%)i	58 (73.4%)	45 (67%)	65(72.2%)	251 (73%)
Opinion	8 (7.4%)	5(6.3%)	10 (14%)	8 (8.8%)	31 (9%)
Others	1 (0.9%)	3 (4%)	0 (0%)	1 (1.1%)	5 (1.4%)

HN= The Hindu, TI= The Times of India, EE= Eenadu, AJ=Andhra Jyothi.

Table 1 shows the number and type of article on GM Foods appearing in the four newspapers during the period under study. General news articles usually report daily events with a fairly straightforward coverage which normally does not include any personal commentary of the reporter. On the other hand, features in newspapers focus less on the events of the day and more on the background of an issue and aim to provide a balanced and objective analysis of the issue to the reader. Commentaries and opinion pieces represent the viewpoint of the writer, who is often an expert in the concerned field.

Editorials present the views of the newspaper on the issue. Interviews are usually carried on two occasions: one is at when the topic is at its peak of debate and the other is when an expert (usually, a visitor) is easily accessible to the journalist. As both the Regional language newspapers i.e. Eenadu and Andhra Jyothi don't specify the section in which an article is published, the researcher has used another strategy to divide the content into different categories based on the content or article type in order to make a comparison between English and Regional Language newspapers. From the above table it is clear that across all newspapers, GM debate was covered as a general news item, with 251 articles (73 percent) being grouped under this category in both English and Telugu language newspapers.

Regional language newspapers have published more opinion articles and editorials when compared to English language newspapers with 18 articles (5 percent) in Eenadu and Andhra Jyothi newspapers together. Most of the editorials and opinion columns in regional media appeared during the approval phase when consultations were being held all across the country. Also, there were more interviews published in regional media (5 interviews, 2 percent) than English language newspapers. The Times of India newspaper published the maximum number of editorials (8 editorials, 5 percent) of all newspapers for the period of the study.
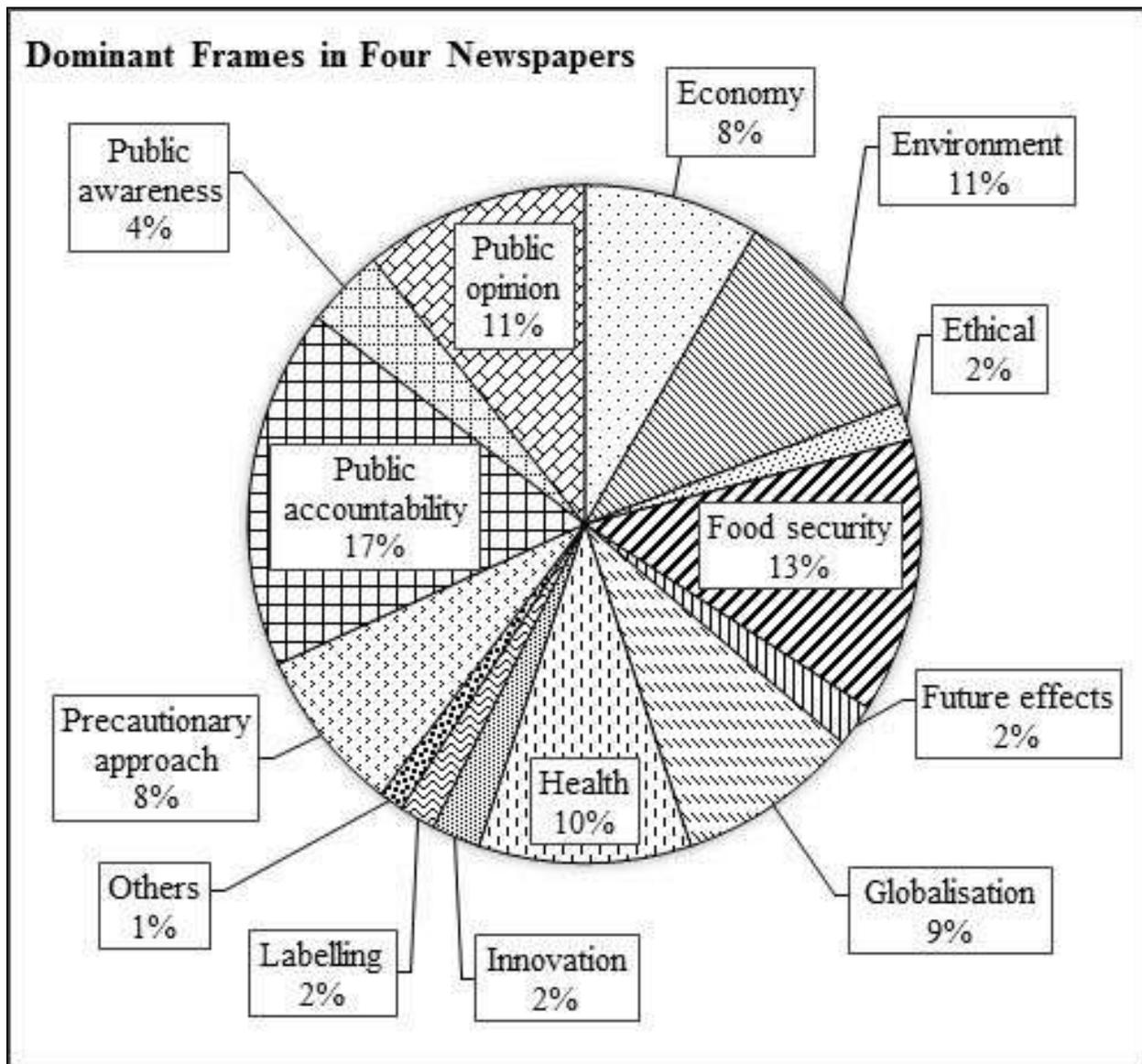
Table 2. Primary sources of information of all newspapers

Type of article	HN	TI	EE	AJ	Total
Biotech Company Representatives	5	1	1	3	10
Environment Minister	13	7	8	7	35
Farmer Groups	8	4	1	6	19
International Research Team	3	2	2	9	16
NGO Representatives	23	5	8	16	52
No Source Cited	13	22	18	16	69
Other Party Leaders	5	6	3	4	18
Others	3	2	0	1	6
Regulatory Body Member	5	5	0	0	10
SC Judge	2	6	0	1	9
State Ministers	4	8	9	13	34
Univ. Sci./Research Institute	23	11	17	14	65
	107	79	67	90	343

HN= The Hindu, TI= The Times of India, EE= Eenadu, AJ=Andhra Jyothi.

In The Hindu newspaper, representatives from NGO Representatives and University Scientists were given equal access as a whole. The then minister for Environment, Jairam Ramesh along with Farmer Groups also got a reasonable degree of access to The Hindu newspaper. In The Times of India newspaper, University Scientists got more access while dealing with the GM debate. The various state ministers in the country (India) and particularly the then Environment minister Jairam Ramesh had better access in The Times of India newspaper. NGO Representatives had little access to the debate in Times when compared to The Hindu newspaper. The Eenadu newspaper provided more space to University Scientists and they had more access compared to others in the GM debate. State ministers also got significant access to reach out to the public via Eenadu newspaper. Apart from this, Eenadu newspaper gave ample voice to the voices of NGO Representatives and the then Environment minister. In Andhra Jyothi newspaper, NGO Representatives, University Scientists and State Ministers almost got equal access in presenting their views to the public.

Figure 2. Dominant frames in the four newspapers

Dominant Frames in Four Newspapers

- Public awareness 4%
- Public opinion 11%
- Economy 8%
- Environment 11%
- Ethical 2%
- Public accountability 17%
- Food security 13%
- Precautionary approach 8%
- Future effects 2%
- Health 10%
- Globalisation 9%
- Others 1%
- Labelling 2%
- Innovation 2%

Public accountability frame, which appeared in 59 articles (17 percent) was mostly used to cover the GM food controversy topic across four newspapers. The controversy was presented as a case where all the major stakeholders were deemed to be accountable to the public before arriving on any decision on this controversial technology. Debate on GM foods was framed as a food security issue which appeared in 45 articles (13 percent). Almost 1/8th of coverage in the newspaper framed the GM food controversy debate as a food security issue. The GM food issue was also framed as an environment frame which appeared in 37 articles (11 percent) in the newspaper. Apart from this, public opinion (11 percent), economy (8 percent), and health (8 percent) frames were the other frames that appeared to convey the GM food controversy to the

public. The GM food controversy was sparsely framed as an ethical issue across all the newspapers with just six articles in from all newspapers. The GM controversy was sparsely framed either as a labeling issue or as an ethical issue in Eenadu newspaper. Public awareness frame which appeared in 13 articles (4 percent) stressed on the need to create awareness among the general public on GM foods in the country (refer Fig. 2).

While the proponents of GM Food felt that people were opposing the technology in the country as they were not fully aware of the potential benefits of the GM technology, the same frame was used by opponents stressing the need to have awareness of risks of GM food technology before adapting it in the country.

The prominence of 'public accountability' frame across all the four selected newspapers acts as a reflection of the trust the general public has on government regulatory institutions, university scientists and on policy makers in the country. All the newspapers stressed on the need to have an impartial and transparent assessment of the benefits and risks of GM Food technology before allowing it in the country.

Table 3: Tones of the headlines

	HN	TI	EE	AJ	ELN	TLN	Total
Anti-GM	52(49%)	31(39%)	37(55%)	47(52%)	83(45%)	84(54%)	167(49%)
Neutral	41(38%)	33(42%)	19(28%)	30(33%)	74(40%)	49(31%)	123(36%)
Pro-GM	14(13%)	15(19%)	11(16%)	13(14%)	29(16%)	24(15%)	53(15%)
Total	**107**	**79**	**67**	**90**	**186**	**157**	**343**

* HN= The Hindu, TI= The Times of India, EE= Eenadu, AJ=Andhra Jyothi, ELN = English Language Newspapers, TLN = Telugu Language Newspapers

Table 4: Tone of articles

	HN	TI	EE	AJ	ELN	TLN	Total
Anti-GM	62(58%)	50(63%)	47(70%)	52(58%)	112(60%)	99(63%)	211(62%)
Neutral	17(16%)	11(14%)	8(12%)	21(23%)	28(15%)	29(18%)	57(17%)
Pro-GM	28(26%)	18(23%)	12(18%)	17(19%)	46(25%)	29(18%)	75(22%)
Total	**107**	**79**	**67**	**90**	**186**	**157**	**343**

* HN= The Hindu, TI= The Times of India, EE= Eenadu, AJ=Andhra Jyothi, ELN = English Language Newspapers, TLN = Telugu Language Newspapers

Read negative tone as anti-GM tone and positive tone as pro-GM tone throughout the paper. This coding of tones is just for convention and the researcher hasn't taken any side in the

debate. Table 3 shows the number of headlines in each newspaper positive, neutral and negative tone towards GM foods. A positive tone here implies a tone that promotes GM food technology, negative tone indicates and aversion towards GM foods and neutral tone doesn't take any fixed position in presenting a story in the headlines. Of the 343 Total articles analyzed, 167 (49 percent) had a negative headline tone towards GM foods compared to 53 (15 percent) that had a positive tone of headline. As per individual newspapers are considered, The Hindu, Eenadu and Andhra Jyothi newspapers had significantly more headlines that had a negative bias in presenting GM food issues. The headlines in The Times of India newspaper had slightly covered this issue more in a neutral tone than the rest of the newspapers. Across all the newspapers, the headlines have not used a positive or proponent tone in presenting the GM debate. Even though a balanced tone was used in headlines, the negative tone of headlines has dominated the coverage in all the newspapers without any exception. The regional language newspapers published more negative headlines than the English language dailies on the GM food stories.

From Table 4 it is clear that of the total 343 articles analyzed, more than half, i.e. around 62 percent articles had a negative tone in reporting the GM food controversy in Indian context. If we look at the tone of articles in individual newspapers, Eenadu had presented the GM food controversy with a negative tone in almost 70 percent of its articles. All the other three remaining newspapers have also portrayed an anti-GM tone in their articles. The Hindu, The Times of India and Eenadu newspapers presented the GM food controversy in a positive tone significantly, however, that was almost half of the negative tones employed. About a quarter of article tones were neutral across all newspapers.

Articles with a negative or Anti-GM tone characterized GM technology as risky technology that could seriously affect the livelihoods of farmers. The technology was presented as a conspiracy by multinational companies to take control over the agricultural sector in the country. In the few articles where positive or pro-GM tone is used, GM foods are characterized as something which is the solution to the food security problem across the world. The neutral tone articles presented a balanced view of the issues by presenting both pros and cons with the technology by almost giving equal space to proponents and opponents of GM technology. In order to make an informed choice, a balanced and objective analysis in media reports is essential. If we look at the overall neutral tone articles it is just 17 percent i.e. merely 75 out of 343 articles presented a balanced account of GM food controversy in newspapers.

Discussion

The focus of the research was the media coverage of the Genetic Modification of Food (GMF) debate from 2008 to 2012 in India print media. This debate offered an opportunity to explore how a scientific controversy gets reported in the media. The study carried out a frame analysis of the mainstream English and Telugu language newspapers on coverage of GM Foods between January 2008 and December 2012. In addition to this, the research examined the construction of GM Food risks in the media. While other research studies conducted on media coverage of

GMF debate in the Western context (Augoustinos et al., 2010; Bauer M, 2005; Botelho & Kurtz, 2008; Castro & Gomes, 2006), in the Asian context (Shineha et al., 2008; Du & Rachul, 2012), in South American nations context (Massarani, L et al., 2013; Campos Motta, R. 2013) and African context (Lore et al., 2013; DeRosier et al., 2015) have examined a number of aspects of coverage, this research explored how the issue was framed, how media coverage was structured in terms of the sources cited, and overall tone of the coverage.

Public accountability frame, which appeared in 59 articles (17 percent), food security which appeared in 45 articles (13 percent) and the environment frame which appeared in 37 articles (11 percent) dominated the entire coverage across all the newspapers. Other than this, public opinion (11 percent), health (10 percent) globalisation (9 percent) and precautionary approach (8 percent) and economy (8 percent) were the most-used frames in covering GM issues. GM food technology was either portrayed as a solution to food security problems or denied as the best solution to food security in all newspapers studied.

Apart from these frames public awareness (4 percent) frame dominated the coverage. The least predominant frames were ethical, innovation and labelling frames in the coverage. The GM food controversy was not seen as an ethical debate between various stakeholders nor was it projected as a labelling issue. The question of labelling as an option was totally ruled because of its implementation in Indian context.

The biotech company representative or the seed company manufacturers, who are one of the core stakeholders of debate, didn't have much access across all the newspapers. This phenomenon was similar across all the four newspapers without any significant exceptions. Only The Hindu newspaper and Andhra Jyothi gave some voice to seed company representatives in their coverage. One can also interpret the low access to biotech company representatives' in media outlets as their unwillingness to talk to journalists in the debate. A poor public relation activity of biotech company representatives can also be seen as the reason for their lower presence in the media. Apart from this, one can also account for this on the ideological inclinations of the journalists who are reporting. Regulatory body members, who more or less make important decisions concerning emerging technologies, didn't also have much access to present their views on this controversial topic across all newspapers. Among all the four newspapers under the current study, The Hindu newspaper tried to give voice to various stakeholders when compared to all three other newspapers.

Conclusion

University scientists', Scientists from reputed research institutes in the country and representatives from NGOs were the main sources to be cited in four newspapers. Biotech company representatives and leaders from Farmer Groups were less contacted by journalists while reporting about GM food issues to the public. Anti-GM tone dominated the coverage across all the four newspapers; however the intensity of negativity varied from paper to paper. The negative tone of coverage in Telugu media was much sharper than English media. The GM

technology was seen as a potential threat to farmer's livelihood apart from characterising it as a harmful technology to the lives of those who consume GM foods. Corporate companies were largely blamed for pushing the technology on farmers. Very few articles across all the newspapers carried stories that projected GM Foods in a positive tone.

From the frame analysis it was found that a single dominant frame can be used in media coverage either way. This implies that just by merely knowing what kind of frame is dominant in an article isn't sufficient to predict the tone of an article. Food security frame, for instance, was depicted in news stories where both the university scientists and Civil Society Group activists were cited as the main sources. This further implies that frames always have to be read in the context of reporting by keeping in view the main source cited.

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