

THE STATUS OF SCIENCE AND TECHNOLOGY REPORTING IN PRINT MEDIA: AN ANALYTICAL STUDY

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Abstract: *Scientific literacy is essential for any kind of development and well-being of a person, society or nation. The proper use of science and technology (S&T) certainly helps to upgrade the human living conditions and it makes life more comfortable, rational and progressive. Nowadays, we are passing through the age of science & technology. So proper dissemination of S&T information is quite important to each person and progressive society. And in this regard, the media can play a vital role. But, there is a general perception about our media especially Hindi daily newspapers that they don't pay good attention to S&T issues and do not provide adequate quantity and space for S&T contents. The present study analysed Hindi daily newspapers i.e. Dainik Jagaran, Hindustan and Amar Ujala on several points like the frequency and quantity of news coverage, allotted space and types of news and tone of Scientific & Technology based stories etc. The results announced that Hindi newspapers have minimal interest and priority in publishing the S&T stories and they are not giving adequate importance to S&T and also not covering the issues of S&T regularly.*

Keywords: Science journalism, Technology, Jargon, Mediatisation, Supplement, Innovation, Tone.

I. INTRODUCTION

Nowadays, Science has become an integral part of our daily life. It has given numerous useful and fruitful gifts to the human being. Science and technology have undoubtedly made our lives more comfortable, easier and joyful. Man is a rational being. So, the logical thinking, remarkable search for knowledge and invention both have revolutionized the whole human life and raised the standard of living. It may be possible that we can live our entire lives without doing any scientific invention, but it is also a fact that everything around us is touched in some way by Science. From birth till death, everything is affected by Science; Science influences every sphere of life. In other words, 'Science is everywhere, and it is playing a very vital role in human life'. As far as science communication is concerned, it can be correlated with the discovery of fire by primitive Man and transferring of this knowledge. Along with the evolution of Man and civilization, we can observe the trends of science communication. As the civilization outpaced and developed, new forms of communication took place subsequently and they started to spread the scientific information to the public and society.

Science journalism is committed to spreading scientific knowledge among the common people, so that they may have advantages of Science and technologies. They can use the knowledge of Science and technology for their betterment and further development. Science and scientific temperament both are essential to rationalize the human mind that helps to find out a proper solution against any specific problem. It also helps to achieve all kinds of developments and to remove issues of various areas. However, science journalism is still in developing stage in India. In view of historical perspective, the beginning of science journalism in Indian languages can be seen in the monthly newspaper Digidarshan, which was published in three different languages, i.e. Hindi, Bengali and English. Some articles on various topics like flying in a balloon, steamboat, etc. were published in the newspaper. Other newspapers also started the publishing of

scientific news and information but the role of science communication was minimal, and it could not extend its entity and didn't aware the society at sufficient level during the nineteenth century. After the publication of many newspapers in many Indian languages, science communication could not be a part of regular publication. It was mainly limited to publication of scientific books and scientific journals.

But within the last two-three decades, science and technology journalism has been developed remarkably and it has also helped to improve our society and nation progressively. But still, in the field of art communication and journalism, there are so many things which have to be achieved. It has too many miles to go to reach a peak point. But in the current scenario, we can say that Science journalism, has also paced its speed and has also covered a long distance. Now, we have considerable progress in science journalism in India. We are moving ahead and trying to create a science environment and scientific temperament in our society. In this context, the media can play a vital role to highlight the S&T issues among the people because nowadays, Media is playing an integral part of people's lives. It is providing the entire current world happening round the clock. It is making awareness among the people regularly about all the information about every field in many ways. Now, nothing is away from our eyes and there are no territorial barriers just due to media. Media has made the world globally and brought the age of information in which we all are living and breathing.

As we feel, our modern society is being governed by science and Technology and it is very likely that the influence of science and Technology on our lives will continue to increase year by year. Modern societies need people with scientific and technological knowledge and qualifications to have a good understanding of the S&T contents and methods. Science and Technology are major cultural products of human society and now it has become occupational 'needs' also. Science & Technology is not only crucial for knowledge and research but also social, cultural, political, economic and much other well-being. Scientific and technological knowledge and skills are essential for most of our taking proper actions and decisions. So, proper dissemination of S&T information and news is quite crucial for any development and progressive society. And there is a significant role of media and especially print media because it is ancient and effective media of the society.

One thing is also significant that when we compare S&T news to other news items like political, crime, business, education, law, court and sports, we can see and realize easily that Science & Technology news helps a lot to upgrade the human life and develop the whole society. Science & Technology (S&T) propel all kinds of development. At present, no community or country can be developed and modernize without help and proper use of science & Technology. And those countries which are just struggling for development and trying to attain a better life and excellent infrastructure, for them, science & Technology (S&T) both are inevitable discipline. They need badly considerable assistance and adaptation of Science and Technology. Therefore, it is a particular requirement of all developing or underdeveloped societies or states. Otherwise, science and technological backwardness can retard the pace of development of any country entirely. So it is vital to responsible governance and institution that they spread proper information of science and Technology (S&T) in the right way so that the public could come forward to adopt it and they could contribute their positive cooperation to accelerate the growth and development of society and nation rightly and smoothly.

In this reference, Media has a vital role and responsibilities to provide S&T news and its developments to the public and society. The role of media and science journalism is to make the public, executors, policy and decision makers and the businessmen aware of the new opportunities and prepare the ground for smooth transferring of Technology to the society at large. Thus, the media and science journalism can play a crucial

role too in promotion of science by increasing the level of awareness of its readers, advising the scientist to take up specific problems of relevance and the government for support of worthwhile science.

Nowadays, when we are passing through the age of technology, then S&T issues have become more important for each person and Society. Everybody wants to be familiar with new science and technology as per the need of his or her convenience, progress and current and future job requirement. Without being familiar with advance S&T, no can get success in any field. Therefore, understanding and realizing the importance of S&T in individual and social economic development, media has also been much focused on S&T events and happening. Media is giving importance to spreading S&T news and information to the public and Society. The Indian market is already the most prominent and fastest growing for the free press in the world. The rapid growing economy, increasing literacy rate, and developing newspaper reading habits are providing a sustained growth to readership and circulation of print media. At the present time, Dainik Jagran has become the number one newspaper on the basis of circulation. Other Hindi newspapers are also growing fast and having a good number of readerships. Since the Hindi language is a national language which is used by the largest number of populations in India. So, there is also a big market for Hindi newspaper with the responsibility to aware the public about S&T and its advancement. Hindi newspapers can be the best medium to spread the S&T news and information among these people and Society. But there is a general perception that Hindi newspapers do not publish S&T contents in proper numbers and proportion.

In this context, the purpose of this research study is to examine that how much Hindi daily newspaper are giving importance to S&T contents? How many S&T stories are being published by newspapers? What are the main types of S&T stories reported in the newspapers? Is the print media providing a proper coverage of S&T stories or not? What are the tones of S&T stories? How much Newspapers are serious and sincere towards science and technology? These are the queries which created the need of this research in my view and the same are analysed and discussed thoroughly in this research study.

II. OBJECTIVES

The specific objectives of the present study are:

1. To study the quantity and frequency of S&T stories in national Hindi daily newspapers.
2. To find out the prominence coverage and main categories of S&T news reported in newspapers based on their nature and contents.
3. To analyse the space allocated to S&T stories in newspapers.
4. To analyse the tone of the S&T stories coverage.

III. REVIEW OF LITERATURES

Numerous studies and opinion have been expressed about Science and Technological communication coverage in the media. The review of journal related to mass media and communication suggests that there is no any commendable study about the coverage Science and Technological communication in Hindi print media, especially in recent years. Whatever studies have been conducted many years before for other languages based on print media, they don't describe satisfactory Science and Technological coverage by print media.

Mr. Gopal Raj, science correspondent of The Hindu said, “In India, Research institutes don’t have a systematic way to share and publish their scientific work and achievements. It is not very easy to approach the scientists and discuss with them on the scientific issues.” But, the most research activities done in foreign countries is really evincive and most scientists publish their work in reputed national and international journals. In comparison to foreign daily, Indian newspapers publish many stories based on discoveries and inventions at foreign research institutes.

Mr. Pallava Bagla, a former Science Correspondent of The Indian Express stated, “Scientists treat the media as a necessary evil that creeps into their workspace”. But, it is also a fact that media have low interest to cover those specific problems which need scientific solutions.

The Hindu science correspondent R Prasad said that most of the reporters, they don’t have skills to understand the scientific terms and jargons in right manner. This thing either leads to misinformation or misconception. “If reporters without having sound knowledge and experience, they meet the scientists, even they are not able to understand the saying and discussions of scientists. And whatever information is published, they are mostly factually incorrect. And if scientists are misquoted, then their credibility, position and reputation may be affected. In current scenario, politics, crime and sex cover maximum spaces in newspapers. So, the most of journalists want to cover the political, sex and crime stories and science is handover in the hands of comparatively young and inexperienced reporters that leads many issues and problems in science reporting.

Undoubtedly, Science & Technology (S&T) impacts the human life and society in many ways. In developing nation like India, nobody can ignore the importance of science and technology as they are ke factors of any kind of development. In this reference, Science Journalism informs and educates the public and society to use it to make their life more comfortable and easier. Science Journalism covers and highlights the happenings, events and innovations of science in the society. It keeps update people through media. Nowadays, Science and Technology communication is an important area for everyone and people want to access reliable information because it has great potential in shaping their lives and making their decisions more accurate, rational and productive. Since last two decades, India has made significant progress in S&T and media have started covering the issues and happenings of science and developments. The print media, specifically newspaper and magazine are giving importance to S&T stories.

Weingart (2002) said that Scientist and journalists differ in many views. The scientists prepare and present usually very knowledgeable and informative research papers. The papers are written academically by using numbers of terminologies for the intellectuals. In contrast, journalism is committed to inform the common public in a simple and interesting way so that the common man can read and understand easily.

In a study, Bader (1990) found that environmental and medical news tended to occupy a space throughout the paper, but the other S&T stories were often limited to special science sections. Continuous researches, criticisms, discussions will increase the S&T temper and publications in the media.

A Finland study done by Erkki Kauhanen & Elina Noppari, (2007) proved, “The amount of S&T material in newspapers is generally considered relatively small. However, constant discussions on the motivation of the S&T innovation journalism have increased the coverage of innovations in the Finland media”.

In a study Rooyan, (2007) revealed, South African press published a small percentage of S&T articles. There is a lack of science & technology news coverage in the African press. The local press is too dependent on foreign publications and news agencies for getting science stories. The positive evaluative tone of

coverage and the discourse of benefits point to a positive relationship between science and the South African press.

According to a research study published by Durant and Lindsey (2000), newspaper coverage of the Genetically Modified (GM) food issue was of prime importance in shaping the debate in Britain. The committee concluded that one of the main problems was the handling of science aspects of news stories by journalists or special correspondents who are not experts in science. The committee identified two ways of meeting this challenge. One is, changing the behaviour of the scientific in dealing with media, towards open and positive communication. And another is changing the way the media deal with scientists.

In a study by Dutta and Garg (2000), on an average, Indian newspapers devoted to less than one per cent of the total printed space to articles and stories related to S&T. News items on S&T in English- language newspaper published in India during January-December 1996 were analyzed in the study. Results show that the greatest proportion of newspaper space was devoted to nuclear science and technology, followed by the defence, space research and astronomy.

By and large, there is a wide assumption that science communication was said to have changed in the past decades. Science is no longer merely transported and translated by the mass media to a passive audience, but “medialized” (Mike, 2009). Nowadays, scientific issues are discussed extensively in the mass media. These discussions are plural in its participants and in the arguments used, and that the issues at stake are evaluated controversially. It is still unclear, however, if this change applies to all science topics or only to some. He argues that science issues from different extents. In the process, these issues analyse the media coverage of the stem cell research, human genome research and neutrino research. The findings reveal that the described change only applies to some issues and the further differentiation of the concept of “mediatisation” is significant.

In another study in India, regional media finds that “there is no good coverage of S&T in print media. The newspapers are not placing S&T news items in adequate manner. There is a lack of educated, dedicated and trained S&T journalists in the newspaper especially in regional languages than English. Therefore, S&T content has become the thoughtful item for those limited people who are well educated in English and only they are enjoying the benefits of S&T, Aruchelvan (2008)”. The study also suggested that application of new ideas, providing training and adopting an academic / industry exchange will help overcome the situation. Generally, the newspaper, especially Indian newspaper has been regularly blamed that, they are giving less coverage to S&T content. But there is no full-fledged research study that has confirmed these allegations. There is a necessity to study and analyse the publication of the S&T news published in an Indian newspaper with a view to enhancing the reach and awareness of scientific knowledge among the public. This study provides an insight into Indian newspaper and S&T news coverage with ground reality.

IV. RESEARCH DESIGN AND METHODS

For the research study, quantitative cum qualitative content analysis method has been used. Three popular, well established and national levels Hindi language Newspapers – Amar Ujala, Dainik Jagaran and Hindustan published from Dehradun district have been taken for this study and analysed from 1st March 2019 to 30th April 2019 (2 Months only). These newspapers were analysed on a day to day basis. And all the S&T contents in all forms (like news, feature, article, editorial etc.) were examined which were focused, based and related to the theme of S&T. Various parameters as per the requirement of specified objectives have been adopted and also analysed accordingly under this research study. This study was based on only

S&T contents of three National Hindi daily newspapers, i.e. Amar Ujala, Dainik Jagaran and Hindustan published from Dehradun district.

V. RESULTS & DISCUSSIONS

A systematic analysis of S&T contents of various three Newspapers revealed very important facts about the orientation of the National Hindi Daily Newspapers towards science & technology. They differ in various parameters like quantity of news coverage, types of news, allotted place for S&T news and tone etc. The important findings of the research study are presented in the form of tables and discussed in this chapter as follows:

1. Frequency of S&T stories published in the Hindi daily newspapers:

The study analysed the coverage of S&T stories published in the different three National Hindi Daily Newspapers-Amar Ujala, Dainik Jagaran and Hindustan. The publication of S&T news in the newspapers is very important to inform of the public and society about scientific happenings, knowledge and practices for the further development. In the study, newspapers vary in the publication of S&T news items on an average basis. The study explained clearly that every newspaper prefers to publish the S&T contents differently to one another.

The data shown in table 1 clearly indicates that during the research period, Amar Ujala published the highest number of S&T contents which was 492. While Dainik Jagran published 474 stories and Hindustan covered only 462 contents in total. In the research study, data denotes that on the basis of quantity means number of publication of S&T news items, all three newspapers have very less differences. And as per analysis, Amar Ujala has more emphasized the S&T issues rather than other newspapers during the period of the research study.

TABLE - 1
Comparative Analysis of Newspapers (Frequency)

Sl. No	Newspapers	Total No. of Stories
1	Amar Ujala	984
2	Dainik Jagran	948
3	Hindustan	924
	Total	2856

2. Prominence coverage and main categories of S&T news in newspapers:

Data shown in table 1 reveals that the Indian Hindi daily newspaper focuses on various subjects of S&T because they have published S&T contents on different topics. All the newspapers have published S&T news more or less on numerous subjects like Botany, Zoology, Physics, Chemistry, Health, Environment, Food & Nutrition, Technology, Computer, Astrology and Nuclear Science. But among all the subjects, Technology comes most frequently and positioned at first place, i.e. 846 stories (29.62%) of the total S&T contents reported by the three selected Hindi daily newspaper during the period of 2 months. As per calculated data, a total of 2856 stories of S&T were published by all three newspapers (Hindustan, Amar

Ujala, Dainik Jagran) during 2 Months. In this publication, data indicate that most frequent & focused subject was Technology 846 stories (29.62%) out of total reported 2856 stories by all newspapers, which was followed by health 732 stories (25.63%), environment 492 stories (17.22%) zoology & physiology 312 stories (10.92%) and nuclear science 156 stories (5.46%). Other subjects are very negligible; the range is varied from 2.10 to 0.42%. There is an interesting finding that on the particular physics subject, only Dainik Jagran published two news otherwise Hindustan and Amar Ujala published the only single story on this subject. Physics was the least essential subject for all newspapers. Even computer science news coverage was very poor while we all are passing through the age of the computer. There were only 60 stories (2.10%) (Out of total reported 2856 S&T stories) which were all published by the newspapers.

Thus all three newspapers majorly focused on Health, Environment and Technology subjects. Where Technology was the most important issue for Amar Ujala and Dainik Jagran, on the other side Hindustan gave more importance to health subject than others. Here one thing is also very noticeable that all Hindi newspapers often ignored food & nutrition, botany, computer and astrology subjects. Data reflects that these subjects are not in priority to publish by all Hindi newspapers.

3. Allotted space for S&T contents in newspapers:

TABLE - 2

Comparative Analysis of Newspapers (Allotted Space)

Sl. No	Newspapers	Total Allotted Space (in cm ²)
1	Amar Ujala	139452.00
2	Dainik Jagran	121663.20
3	Hindustan	114680.00
	Total	375795.20

Place and space are more important factor in print media. The given space size and place shows the importance of any news story. From this point of view, data from Table 2 reveals that Amar Ujala has given maximum space, i.e. 139452 cm² to S&T in comparison to other newspapers. Dainik Jagran came in second place, i.e. 121663.20 cm² and Hindustan allotted only 114680 cm² spaces to S&T contents relatively. Hindi daily newspapers have given only 3% of the total reported area of newspaper to S&T stories which is not satisfactory.

4. Tone of story coverage in newspapers:

The tone of writing also expresses the feeling and attitude. It is also an important basis to check and evaluate the nature of published contents. The tone of S&T stories coverage is positive among Hindi daily newspapers. Most of the stories published in a positive tone (94.52%), followed by a neutral tone (4.21%) and negative tone (1.27%).

Amar Ujala has a more positive tone towards S&T stories (95.12%) in comparison to others (Hindustan, 94.80%) and Dainik Jagran, 92.41%). With regard to the neutral stories, Dainik Jagran is more neutral (5.06%) than Hindustan (3.90%) and Amar Ujala (3.66%). In the publication of stories with negative tone Dainik Jagran published 2.53%, Hindustan 1.30% and Amar Ujala 1.22%.

VI. CONCLUSION

The overall picture emerging of the above study is that the Hindi daily newspapers are very poor in the publication of S&T stories. They have no good focus and priority for publishing S&T stories. However, they published supplement based on Health and Science issues weekly ('Jaan Jahan' on Tuesday by Amar Ujala, 'Health Tarakki' on Friday with Hindustan, 'Saptrang' on Tuesday by Dainik Jagran). But the research study summarizes that the coverage of S&T is minimal. It is far away from a satisfactory stage. In another way, it can be said that it is almost negligible in Hindi Daily newspapers. The study also found that the newspapers have published only 3 or 4 S&T stories daily on an average, which is very less as compared to other beats of news stories. Sometimes, they published only one story throughout the newspaper and a few days, it is also observed that Newspapers, they didn't publish any single story based on Science and Technology. This finding clearly shows the ignorance of Hindi Daily Newspapers towards S&T.

About the type of story and subjects, all newspapers gave more importance to Technology and Health. The overall Newspapers published stories mostly on technology (30.25%) and gave second importance to the Health news (25.63%) of total reported stories within the specified duration of the research study. In comparison between newspapers, Amar Ujala has covered more S&T stories than others. However, there is some difference regarding the first priority of coverage of news among the newspapers. As Amar Ujala and Dainik Jagran, both have given first priority to 'Technology' but Hindustan gave first importance to Health stories (39.34%) of total reported stories.

In the matter of space, Amar Ujala has also given more space (139452cm²) to S&T stories than other newspapers. In reference to Tone, the study clearly indicated that the tone of S&T news coverage was positive among the Hindi Daily Newspapers. They have a more positive tone in the publishing of S&T contents and news stories.

Therefore, the study has revealed that the present overall scenario of Hindi Daily Newspapers towards S&T story publications is not up to the mark. In other words, it is not satisfactory. They have given almost very less importance to the S&T subject, which is not a positive sign for the sake of public interest. When we are passing through the age of Science & Technology, then it is essential to cover the S&T subject fair manner so that the public could be appropriately informed. They could have an excellent scientific temper, and by using technology and science, they can ease and advance their lives in many ways. Since science and development are closely related. So it is essential to print media organisations that they spread the scientific news issues and enhance the scientific awareness among the people and society so that people could be more informed and aware about S&T. And with the proper use and adaptation of technological advancement, they could contribute positively to make their life and society more rational and comfortable because S&T helps a lot in the way of development of any person or society.

VII. RECOMMENDATIONS

Based on the findings of the present study, it is suggested that Hindi Daily Newspapers should give adequate importance to S&T subjects in their reporting and coverage of news. They should cover all kinds of S&T stories in a proper manner which is directly linked to development. There should be a regular column for S&T subject in Hindi Daily newspapers. The Editor should monitor the coverage of S&T stories and give specific guidelines to S&T journalist to cover all kinds of S&T stories in the best way.

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