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Dissemination of Scientific Research Findings, A Prerequisite for National Development

Solomon Gyasi-Boakye*

CSIR-Crops Research Institute, Box 3785, Kumasi

Anthony Bonnah-Koomson

School of Communication Studies, University of Ghana, Legon, Accra

*Corresponding author: solomongyasiboakye@yahoo.com

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Abstract:

This study investigates the dissemination of research findings generated by the institutes under the Council for Scientific and Industrial Research (CSIR) to the general public in Ghana. To achieve the objectives of the investigation, two state owned dailies; the *Daily Graphic* and the *Ghanaian Times* were sampled for the study coverring 2001 and 2002. Issues on the CSIR and its institutes which received adequate publication, the subject matter which received greatest coverage and which institute received the most coverage for its activities were examined. The Daily Graphic published more stories (32) representing 64% on the CSIR than the Ghanaian Times (18) representing 36%. Generally, however, the CSIR did not receive much coverage from the two dailies. Out of 1248 issues sampled, only 46 issues were related to the CSIR, providing a total of 50 stories. Lack of requisite expertise of journalists of both papers in science and technology might be a contributory factor. The subject matter which pre-dominated the two dailies was technology transfer. The CRI was the most featured institute under the CSIR. For economic advancement, it is imperative that science and technology is disseminated to the generality of the public and it could start with frequent publication of the scientific findings of the CSIR institutes by the media.

Key words: *Daily Graphic*, Ghana, *Ghanaian Times*, research findings.

INTRODUCTION

Research, science and technology are the mainsprings for the rapid development of any country. It is therefore imperative for any nation desirous of making significant progress to accord these pillars of development the necessary recognition. It has been observed that the role of national science and technology policy was critical to establishing conditions for development (World Bank, 1997). Today, the most economically advanced countries are those with strong scientific and technological capabilities. Access to scientific and technological information helps in the advancement of science and technology, which are essential ingredients for socio-economic development. Frame (1982) stated that science leads to the generation of technology, and when technology is applied, it leads to increased productivity and consequently economic growth. The indispensability of science and technology to economic independence underpinned the statement that "science has become an inseparable part of human culture and that all spheres of human endeavours are influenced by science and technology and that a country's capacity to exploit her natural resources depends to a large extent on her ability to harness and develop her science and technology capacity" (Rostand, 1960). According to Smith (1996) "in the advanced world, agricultural science is so well developed to the extent that the production of abundant and high quality food crops is economically viable". This contrasts with the situation in the developing world where a majority of the farmers still employ outmoded methods of farming. Ghana, like most developing countries, is confronted with a myriad of challenges, which needed to be tackled with science and technology tools. In the field of agriculture, for instance, there is the need to increase production by the application of fertilizers, use of high-yielding planting materials, use of crop varieties resistant to diseases and pests and the development of appropriate processing technologies to reduce the incidence of massive post-harvest losses. The production of crops is constrained by infestation of diseases and pests. Increasing pressure from a range of insect pests (eg. leaf and tuber beetles, mealybugs,

and scale insects) as well as nematodes, fungi and viruses contribute to sub-optimal yields and deterioration of quality in storage (Korada et al., 2010). However, only sustainable diseases and pests management strategies which do not abuse the environment should be employed. To be successful in this direction, science and technology is the key. Realizing the significance of science and technology as the cornerstone of the achievement of national development programmes, the Government of Ghana, in 1996, made science and technology a central focus in its Vision 2020 document. The vision states *inter alia*: "Science and technology has an important role to play in the developmental process. With respect to economic growth, the application of science and technology is essential for improvements in productivity on which all economic growth finally depends…. Recognition by decision-makers at the highest level of the importance of science and technology as a tool for the rapid development of the country and public in general is crucial to any effort to adopt a science and technology culture".

We must be convinced of the power of science and technology in building a stable government and in creating wealth and better living conditions for ourselves, our families and posterity. Scientific research findings must be disseminated to be useful to mankind. The onerous responsibility therefore lies with the media to inform, educate and thereby facilitate the deepening of scientific culture. Two media houses, the *Daily Graphic* and the *Ghanaian Times* were selected to study the operations of the Council for Scientific and Industrial Research (CSIR), which is responsible for core research in the country and whose Director General is an advisor to the government on scientific research issues.

SIGNIFICANCE OF THE STUDY

The first significance of the present study is informed by its attempt to content analyze the media in relation to their coverage of stories on the CSIR in the form of "straight news", "feature articles", "editorials" and "letters to the editor". The study focuses on the "subject matter" of the stories carried, as well as the Issues on the CSIR and its institutes

which received adequate publication, and which institute received the most coverage for its activities. Such an approach would permit a deeper insight into scientific reporting in general and coverage of the CSIR in particular. Secondly, knowledge, it is said, is power. This popular saying holds valid especially when people use scientific knowledge they acquire from reading science based news to improve upon their living conditions and that of society. Healthy lifestyles, better nutrition, good sanitation and environmental cleanliness are some of the ripple effects of scientific knowledge. The findings of the present study would be of interest to media practitioners, researchers, policy makers, communication and social science students, as well as the general public.

PROFILE OF THE *DAILY GRAPHIC*

The Daily Mirror group of London established the *Daily Graphic* in 1950. Its operations were, however, taken over by the then ruling Government of the Convention People's Party (CPP) in 1962 and ever since it has been owned by the state. The *Daily Graphic* is the single largest selling and most patronized newspaper in Ghana. As at 1998, it maintained a circulation figure of 120,000 copies per day (Ansu-Kyeremeh and Karikari, 1998).

Currently, the *Daily Graphic* runs a regular 48-page edition. It has specialized sections on business, foreign news, politics, metropolitan news, regional news, sports, features, letters to the editor and gender issues.

The newspaper is published by the Graphic Communication Group Limited, which is managed by a board and a Chief Executive Officer appointed by the National Media Commission (NMC), in consultation with the President of the Republic of Ghana.

The *Daily Graphic* is published from Monday to Saturday each week. It reaches all the ten regions of Ghana. The current editor is Ransford Tetteh.

PROFILE OF THE *GHANAIAN TIMES*

The *Ghanaian Times*, a state owned daily paper started as "Guinea Times" in 1958. The name changed to the *Ghanaian Times* in 1971(Ekwelie, 1971). The objectives for establishing the paper were; to counter the then foreign-owned *Daily Graphic* and also

propagate the socialist ideology and propaganda of Dr. Kwame Nkrumah, the first president of the republic of Ghana. The *Ghanaian Times* had a circulation of 25,000 as at 1998 (Ansu-Kyeremeh and Karikari, 1998). At present, the Ghanaian Times runs a regular 16-page edition. It has specialized sections on politics, sports, home news, foreign news, society and lifestyle, business, features and commentaries.

The newspaper is published by the New Times Corporation, and managed just like the *Daily Graphic*. The paper is published from Monday to Saturday each week except on holidays. It is available in all the ten regions of Ghana. The current editor is David Agbenu.

PROFILE OF THE COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH (CSIR).

The CSIR, a public institution was established by the National Liberation Council Decree (NLCD 293) of October 10, 1968. It was amended by NLCD 329 of 1969, and re-established in its present form by the CSIR Act 521 on November 26, 1996.

The CSIR resurrected from the erstwhile National Research Council (NRC) which was established by government in August 1958 to organize and coordinate scientific research in Ghana. In 1963, the NRC was merged with the former Ghana Academy of Sciences, a statutory learned society. Following a review in 1966, the Academy was reconstituted into, essentially, its original component bodies, namely, a national research organization re-designated the CSIR, while the learned society was designated the Ghana Academy of Sciences (CSIR Handbook 1999). The Director General of the CSIR is the advisor to the President on matters relating to scientific research in the country.

OBJECTIVES

The objectives of the study were to identify:

which issues on the CSIR and its institutes received adequate attention in the media, which subject matter received more coverage in the media and which CSIR institute received more coverage for its activities.

METHODOLOGY.

To achieve the objectives of the study which covered a two-year period (January 1, 2001-December 31, 2002), appropriate media were identified. Earlier studies by Omari (1987), Andoh (1993), Bennie (1997), Gyasi-Boakye (1999) and Manteaw (2001) implicated the *Daily Graphic* and the *Ghanaian Times* as the leaders in the coverage of science and technology news, focusing on agriculture, forestry, environment, health and industry. Therefore, the two widely circulating state-owned daily newspapers (the *Daily Graphic* and *Ghanaian Times*) were chosen for the study. It was anticipated that the two newspapers would cover the activities of the CSIR, the main public institution responsible for pursuing the implementation of government policies on scientific research and development (CSIR Handbook, 1999).

Content analysis

Content analysis was used in analyzing press coverage of the CSIR because it is a useful tool for quantifying public information and determining the nature of coverage and prominence that a newspaper gives to an issue. Specifically the study examined the "type/category", "subject-matter" of stories and "institutes frequently featured" by the two daily papers.

Sample size

This study considered all editions of the *Daily Graphic* and the *Ghanaian Times* from January 1, 2001 to December 31, 2002, providing a total sample size of 1248 issues of both newspapers. The breakdown was as follows: 312 issues each, for 2001 and 2002 of the *Daily Graphic* and the *Ghanaian Times*. In all, a total of 50 stories on the CSIR from 48 issues of both newspapers were analyzed.

Data collection procedure

The data for the study were collected from the two media houses using a coding scheme designed for the purpose of the research.

Coding reliability

The coding involved 25 stories obtained from both the two newspapers comprising 16 and 9 stories in the *Daily Graphic* and the *Ghanaian Times* respectively. The researcher was assisted by an assistant and each coder thus had to make 25 decisions on subject-matter of stories on the CSIR in the two dailies, giving a total of 25 decisions per coder on subject-matter. When we compared our decisions on the subject-matter of all the stories on the CSIR, there was agreement between the two coders on 20 out of the 25 stories, while there was disagreement on five (5).

The Holsti formula for determining the reliability of nominal data in terms of the percentage of agreement was used (Holsti, 1969).

The formula states that:

$$\text{Coder reliability (CR)} = \frac{2M}{N1 + N2}$$

Where M is the number of coding decisions on which the two coders agree, and N1 and N2 are the total of decisions made by the first and second coders, respectively.

M = 20; N1 = 25; N2 = 25

$$\frac{2M}{N1+N2} = \frac{2 \times 20}{25+25} = \frac{40}{50} = 0.8$$

Percentage agreement for subject matter = 80%

Units of Analysis

The units of analysis for this study were defined as follows:

Straight news: News reports on events and issues that had to do with the CSIR and its institutes

Feature articles: All articles other than straight news reports on the CSIR and its institutes

Editorials: The opinions of the newspapers on the CSIR and its institutes as expressed in their editorial columns.

Letters: All letters on the CSIR and its institutes addressed to the editor and published.

RESULTS AND DISCUSSION

Types/Categories of stories on the CSIR

The study sought to find out the types/categories of stories the *Daily Graphic* and the *Ghanaian Times* frequently published on the CSIR.

The purpose of analyzing this content category was to identify how stories on the CSIR were presented in the papers. For example, hard news reports on the CSIR present only the facts without detailed analysis. Feature articles on the other hand are more detailed, lengthy and analytical with a lot of background information. Editorials reflect the opinion of the newspaper on issues of the CSIR. Letters to the editor highlight public sentiments on CSIR issues and serve as an important channel for feedback.

Analysis of the total number of stories on the CSIR recorded for the period revealed that most (78.1%) of CSIR stories in the *Daily Graphic* were straight news stories, features and editorials were 9.3% each and letters were 3.1% (Table 1).

On the other hand, all the stories on the CSIR in the *Ghanaian Times* (100 percent) were straight news stories, with none for features, editorials and letters to the editor.

Thus, the *Ghanaian Times* covered only straight news stories, a position which made the Daily Graphic a more balanced paper. The *Daily Graphic* had the penchant of stating the paper's positions on issues affecting the CSIR.

The overall results, however, indicate that most (86%) of the stories covered by both papers were in straight news format. Features and editorial commentaries had six percent each, while letters to the editors recorded a meager two percent.

Straight news stories, by their nature, take their sources from workshops, interviews, discussions, durbars, etc. where activities and achievements of the CSIR, are outlined by scientists and other public officials.

Reporting straight news stories does not require any high level of scientific exposure, expertise and authority on a subject matter. Most Journalists therefore, would be more

comfortable with just reporting what a scientist has presented at a scientific meeting, trial site or in an interview than doing in-depth analysis on the activities of the CSIR.

Subject-matter of stories on the CSIR

The study investigated which subject matter pre-dominated the two daily papers during 2001-2002 (Table 2). To do this, all the stories on the CSIR were classified into major subject areas according to Bruce's science stories categorization system and modified for this study (Bruce, 1975). The subject-matter categories were defined as follows: Research results, Technology transfer, CSIR-policy and CSIR collaboration.

The results presented in Table 2, indicate that the *Daily Graphic* devoted 40.6 % of its 32 stories to "technology transfer" while 21.9 % went to "research results". On the other hand, of the 18 stories published by the *Ghanaian Times* during the period, 38.9 % were on both "research results" and "technology transfer".

CSIR-policy trailed the frequency distribution with a total of 14% by both dailies whilst "technology transfer" topped with a total of 40%.

Frequency of coverage of CSIR institutes

To investigate the frequency of coverage of CSIR institutes during the period under review, counts of all the stories covered on the various institutes in the two newspapers were painstakingly made as presented in Table 3.

From the results, the *Daily Graphic* devoted more than a fifth (21.9 %) each of its 32 stories to the Crops Research Institute (CRI) and the CSIR Secretariat. These were followed by the Animal Research Institute (ARI) which had 15.6% coverage. Two others; the Institute of Industrial Research (IIR) and the Savannah Agricultural Research Institute (SARI), followed with 9.4 % each. The Oil Palm Research Institute (OPRI) received 6.2% coverage while the Institute of Scientific and Information (INSTI) and the Science and Technology Policy Research Institute (STEPRI) were not covered at all by the *Daily Graphic*.

On the other hand, of the 18 stories covered by the *Ghanaian Times* during the period, two stories each, representing 11.1%, went to FORIG, INSTI, OPRI, the Plant Genetic

Resources Research Institute (PGRRI), SARI, the Soil Research Institute (SRI) and the Water Research Institute (WRI), to occupy the first position.

One story each (5.5%) was covered on the Building and Road Research Institute (BRRI), CRI, the Food Research Institute (FRI) and STEPRI to occupy the second position.

Three institutes; ARI, IIR and CSIR secretariat were not covered by the *Ghanaian Times* during the period under review.

Generally, the study indicated that the CRI received the highest coverage in the two newspapers, with 16%. It was followed by the CSIR Secretariat (14%), ARI and SARI (10% each) and the OPRI (8%) in that order.

It is interesting to note that the agricultural research institutes (CRI, ARI, SARI and OPRI) received more coverage in the two newspapers than the institutes on the other disciplines such as forestry, environment, health and industry.

The reasons which accounted for this position might include the following: the agricultural research institutes played a major role in the President's Special Initiatives (a private-sector led intervention by government to diversify Ghana's economy) on cassava and oil palm, which began within the period under study. The press gave much coverage to the agricultural research institutes to reflect the agrarian nature of Ghana's economy. Furthermore, the perceived relevance of the agricultural research institutes to the general public might have contributed tremendously.

Conclusion

The study showed that the *Daily Graphic* published more stories (32) representing 64% on the CSIR than the *Ghanaian Times* (18) representing 36%. Generally, however, the CSIR did not receive much coverage from the two dailies. Out of 1248 issues sampled during the study period, only 46 issues were related to the CSIR, providing a total of 50 stories. Lack of requisite expertise of journalists of both papers in science and technology might be a contributory factor. This suggestion is based on Shoemaker's (1991) statement that an editor's news selection process is influenced, among other things, by his or her

knowledge of the subject-matter. The subject matter which pre-dominated the two dailies was "technology transfer" which is an aspect of straight news which does not require special knowledge to publish. The CRI was the most featured of the CSIR institutes. For economic advancement, it is imperative that science and technology is disseminated to the generality of the public and it could start with frequent publication of the scientific findings of the CSIR.

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Table 1. Frequency distribution of type/category of stories on the CSIR in the Daily Graphic and the Ghanaian Times in 2001 and 2002

Type of story	Daily Graphic		Ghanaian Times		Total (DG + GT)	
	Freq.	%	Freq.	%	Freq.	%
Straight news	25	78.1	18	100	43	86.0
Feature	3	9.3	0	0	3	6.0
Editorial	3	9.3	0	0	3	6.0
Letters	1	3.1	0	0	1	2.0
Total	32	100	18	100	50	100

Table 2. Frequency distribution of stories on the CSIR by subject matter in the Daily Graphic and the Ghanaian Times in 2001 and 2002

Subject matter	Daily Graphic		Ghanaian Times		Total (DG + GT)	
	Freq.	%	Freq.	%	Freq.	%
Research results	7	21.9	7	38.9	14	28
Technology transfer	13	40.6	7	38.9	20	40
CSIR policy	6	18.7	1	5.5	7	14
Research collaboration	6	18.7	3	16.7	9	18
Total	32	100	18	100	50	100

Table 3. Frequency distribution of stories on the CSIR by institutes in the Daily Graphic and the Ghanaian Times in 2001 and 2002

CSIR Institutes & Secretariat	Daily Graphic		Ghanaian Times		Total (DG + GT)	
	Freq.	%	Freq.	%	Freq.	%
ARI	5	15.6	0	0	5	10
BRRI	1	3.1	1	5.5	2	4
CRI	7	21.9	1	5.5	8	16
FRI	1	3.1	1	5.5	2	4
FORIG	1	3.1	2	11.1	3	6
IIR	3	9.4	0	0	3	6
INSTI	0	0	2	11.1	2	4
OPRI	2	6.2	2	11.1	4	8
PGRC	0	0	2	11.1	2	4
SARI	3	9.4	2	11.1	5	10
STEPRI	0	0	1	5.5	1	2
SRI	1	3.1	2	11.1	3	6
WRI	1	3.1	2	11.1	3	6
Secretariat	7	21.9	0	0	7	14
Total	32	100	18	100	50	100