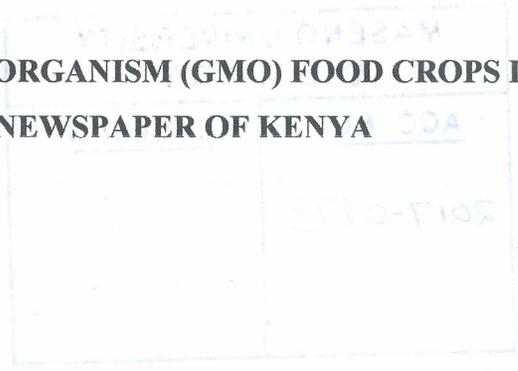


**COVERAGE OF GENETICALLY MODIFIED ORGANISM (GMO) FOOD CROPS IN
KENYA BY THE DAILY NATION NEWSPAPER OF KENYA**



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**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF
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ABSTRACT

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The study was intended to assess the coverage of Genetically Modified Organism (GMO) food crops in Kenya by the Daily Nation newspapers. Public controversies will increase the penetration of the mass media and thereby reduce the disparities in the representation of biotechnology in public. Controversies thus raise awareness and educate the public. Concerns have emerged that though most journalists are well trained; many lack a scientific education to satisfactorily handle subjects like GMO food crops. Globally, a record 175 million hectares of GMO food crops were grown in 2013 up from 170 million hectares in 2012. Africa has made progress with Burkina Faso and Sudan increasing their GMO acreage. Sub-Saharan Africa has remained food insecure for several successive years despite agriculture being its main economic activity. A French Study published in the Journal, "Food and Chemical Toxicology" in November 2012 that was later retracted, questioned the safety of GMO food crops. But, the controversy has continued to elicit mixed reactions that are mainly disseminated by the media. This explains why this study is important to determine the level and nature of coverage of GMO food crops in Kenya by the Daily Nation Newspapers. The main objective of this study was to assess how journalists communicate emerging information about GMO food crops; establish how placement of GMO food crop stories in the Daily Nation Newspaper affects coverage; analyze the perception of Nation Media Group Newspapers' journalists on coverage of GMO food crops; to find out challenges that journalists face when reporting about GMO food crops. The study was guided by the Diffusions of Innovation Theory by Rogers (1995), that emphasizes on information exchange through which one individual communicates a new idea to one or several others. Out of a population of 32 journalists targeted, a response rate of 100 per cent was realized through purposive sampling method from a sample size of 10 respondents who were interviewed on this subject. Content analysis was carried out on 89 Daily Nation newspapers out of which 18 had news stories on GMO food crops, used 21 times. The Daily Nation was selected for the study because it leads in circulation and readership, and the four months from October 1, 2012 to January 31, 2013, were appropriate because the debate on GMO food crops was at its peak, following the publication of the a French study on September 19, 2012 that linked GMO food crops to cancer. Both quantitative and qualitative data were analyzed using descriptive research design to obtain opinions about the naturally occurring behavior, perceptions or other characteristics. The study found that coverage of issues touching on GMO food crops is poor given that few stories were published each month. This was corroborated by lack of clear guidelines to promote consistency in coverage of GMO issues. Journalists as purveyors of information on GMO food crops mainly focus on emerging issues. Journalists are dissuaded from focusing on GMO issues due to provision of biased information, use of technical terms and provision of conflicting information. Based on the findings, it is recommended that media managers address inconsistent coverage by re-viewing their in-house policies to strengthen the role of the media in educating and informing the public. Government officials must rethink about their communication policies to effectively engage the media and enhance accurate and timely coverage. Lastly, journalists need refresher courses and trainings particularly on media ethics to promote balanced coverage of issues.

1.1 Overview

This chapter gives the back ground of the study, statement of the problem and objectives of the study. It also outlines the significance and scope of the study.

1.2 Background to the Study

This study was designed to examine the coverage of genetically modified (GM) crops by the Daily Nation Newspaper in Kenya between October 2012 and January 2013. This was the period when debate on this topic was at its peak. It is the time just after the government had banned importation of GMO products, following a French study that linked GMO to cancer.

The problems that this study endeavors to address include, that it is possible that readers of the Daily Nation Newspapers are not getting clear messages on GMO food crops hence possible low reception and acceptance of GMO food crops in the country. Consequently, journalists who cover GMO food crops could be having a negative perception on consumption and growing of GMO food crops and these perceptions end up affecting how they communicate to the masses. The placement of stories touching on GMO food crops in the newspapers would also be a factor affecting the coverage of these crops by journalists. It could be that the articles on GMO food crops are placed in the inside pages where they are rarely seen.

Since the mid-1990s, there has been a drastic rise in total cropland planted with genetically modified foods worldwide. This staggering increase is reflected in media, resulting in a remarkable amount of coverage being given to the issue, especially in global newspapers. Even in today's increasingly technological society, newspapers remain influential for a number of reasons (Nichols-O'Neill, 2012). This explains why journalists as conveyers of information are important in the GMO food crops debate.

On the heels of USDA deregulation of the Arctic® apple -- the first genetically engineered apple, leading consumer, food safety and environmental groups issued a response to widespread media reports wrongly characterizing the science on GMOs as settled. According to a press release from the Centre for food safety (2016), a peer-reviewed statement in the *Environmental Sciences Europe* says the claim of scientific consensus on GMOs frequently repeated in the media is “an

artificial construct that has been falsely perpetuated". Not one independent, public safety study has been carried out on the Arctic® apple, and yet some media stories have reported it is 'safe.

"We call on the press to accurately report on the science of GMOs, particularly the health and environmental concerns raised by scientists and the lack of required safety studies that leave questions about the safety of genetically engineered foods," (Centre for food safety, 2015).

Entitled "No scientific consensus on GMO safety," the statement in the journal of *Environmental Sciences Europe* does not take a position on whether GMOs are unsafe or safe. Rather, it cites a concerted effort by GMO seed developers and some scientists, commentators and journalists to construct the claim that there is a "scientific consensus" on GMO safety, and that debate on the topic is "over."

"That claim "...is misleading and misrepresents or outright ignores the currently available scientific evidence and the broad diversity of scientific opinions among scientists on this issue," (Centre for food safety, 2015).

This indicates how journalists as conveyors of vital information can be accused of misrepresenting issues of public interest.

According to the Centre for accountability in Science (2016) despite the wealth of reputable research on GMOs, activists and members of the media continue to claim that there is limited research into the effects of GMOs on health. The views of anti-GMO activists are given nearly equal coverage by mainstream media, spreading doubts about GMO safety. Despite their lack of peer-reviewed, scientific evidence to support their claims, their positions are largely given equal footing with respected scientists.

Since the first commercial introduction of GM food in the mid-1990s, there has been growing concern among the public over the safety of GM food, particularly in Europe which experienced a number of food scares in the second half of the 1990s that were unrelated to GMOs (WHO, 2011). Globally, a record 175 million hectares of GMO food crops were grown in 2013 up from 170 million hectares in 2012. Africa has made progress with Burkina Faso and Sudan increasing

their GMO acreage. (Global Status of Commercialized Biotech/GMO food crops; 2013, by Clive James).

As Nichols-O'Neill (2012) observes, a study, "Food Science: Media Coverage of Genetically Modified Foods in the US and France, 1998-2002" analyzed media framing of genetically modified foods in the US and France. While both US and French newspapers discussed safety, economics, risks and labeling issues, US media focused more on regulation issues and French media focused on food quality and regulatory policies to protect health.

Sub-Saharan Africa has remained food insecure for several successive years despite agriculture being its main economic activity. Among the emerging technologies and which is contentious is the modification of plant genes by incorporating therein copies of genes from specific bacteria to code for certain desirable traits such as pesticide and herbicide resistance, nutritional value and storage life (Panos Institute, 2005). Research has been carried out into the possibility of such GM crops as soybean, maize and sorghum in order to impart such traits. Most of the science journalists are well trained. However, many lack a scientific education. Journalists who have not been trained scientifically see more potential risks in genetic engineering than their colleagues with a scientific education. Scientifically trained journalists in the daily press hardly have a chance to speak. Up to date concerns of genetic engineering, which are of general interest, are often taken off their hands by other journalists (Kepplinger, Ehmig and Alheim, 1991)

This explains why it is important to indeed confirm if journalists handling GMOs ended in that genre out of interest or had no choice due to arrangements in their newsroom. In the current situation, journalists who have no interest in the GMO subject can be tasked to cover such forums. In the process, they are likely to let their perceptions, control how they report on the subject. This leaves the public in a dilemma over the place of these crops in improving the country's food situation as safety concerns remain unresolved. As a result the study will guide media managers on how to adjust to improve on GMO and by extension biotechnology coverage.

An earlier study by Nichols-O'Neill (2012) on the news coverage of genetically modified foods explored the way the topic is framed in relation to varying national characteristics utilizing the

community structure approach. The study analyzed the impact of society on media coverage of genetically modified foods using the community structure approach. It examined the relationship between national characteristics and national newspaper coverage of favorable versus unfavorable towards genetically modified foods. The study showed that genetically modified food is an important issue that is a major debate in global media. Media coverage of genetically modified food is highly influenced by national characteristics, further supporting the community structure approach. Journalists were not studied yet they play a critical role in the dissemination of the GMO messages. This underscores the importance of this study that focuses on journalists, to bridge the gap.

While the issue of genetically modified foods is a relatively new debate, it is one that has caused tremendous controversy in its short history. The topic of genetically modified foods affects almost everyone – scientists, governments, non-governmental organizations, farmers and parents alike. Because foods are internationally traded goods and a necessity for human survival, the debate has grown into a major global issue (Nichols-O'Neill, 2012).

According to Tuchman's study (as cited in Santaniello, Evenson and Zilberman, 2002), news, like all public documents, is reconstructed reality, assembling facts and information within a narrative structure, or frame, which serves to communicate an event or story to the reader. Through frames, media highlight certain points of view and marginalize or ignore others, defining occurrences, and explaining how they are to be understood (Santaniello et al., 2002).

Currently in Africa, commercial growing of GM crops occurs only in Sudan, Burkina Faso, Egypt and South Africa (ISAAA, 2013). Kenya became the fourth African country to permit trial farming of GM crops in open fields as a precursor to commercialization of GM crops, after the signing into law of the Biosafety Act in February 2009, (Njagi, 2010).

The subject of GM technology has been shrouded in controversy and debate in global, regional and national arenas, and the media has been at the centre of this debate. Indeed, the mass media have an important role to play in informing and educating the public, about the pros and cons of such innovations like GMO technology.

In exploring the interrelations between controversy, media coverage and public knowledge about biotechnology, it takes up the long standing discussions on mass media effects, in particular the knowledge gap hypothesis; and put several propositions to the test. This hypothesis implies that media coverage on issues far from every day experience, such as emerging technologies, will increase the inequalities of knowledge and awareness in society owing to differential public attention to the mass media. However, public controversies will increase the penetration of the mass media and thereby reduce the disparities in the representation of biotechnology in public. Controversies thus raise awareness and educate the public. Therefore, controversies on GMO food crops have led to increased flow of information from the mass media in Kenya making more people aware of the subject (Santaniello, Evenson and Zilberman, 2002).

However, it is important to find out how the information is disseminated by the journalists tasked with this noble duty. It is worthy establishing if indeed their view is that as long as there is controversy, that is the way to go without taking extra strides to communicate finer details of the situation and the way forward to elicit a worth debate. The media report and represent issues at stake in society. In this case, the subject on GMO food crops is controversial in nature given the push and pull over the adoption of the GMO technology.

More importantly, the media educate people about complex issues. Within journalistic practice, the media are expected to be facilitators of public deliberations in general as well as provocateurs of public debate in particular (Berger, 2005). In other words, professionally, journalists are expected to probe issues beneath the surface. Mujtaba (2011) in his post titled, 'Mass Media and its influence on Society' appearing on Opinion Maker, a virtual Think Tank observes that in the last five decades or so, the media and its influence on the societies, has grown exponentially with the advance of technology. To understand the influence of mass media on society, it is imperative to explain the three basic functions of mass media; they are providing news/information, entertainment and education.

The first and foremost function of the media in a society is to provide news and information to the masses, which is why the present era is sometimes termed as the 'information age' as well. People need news/information for various reasons: on one hand it can be used to socialize and on

the other to make decisions and formulate opinions. Educating the masses about their rights, moral, social and religious obligations is another important function of mass media, which needs no emphasis (Mujtaba, 2011).

As a US Department of Agriculture (USDA) Foreign Agricultural Service (FAS) Gain Report (2012) indicates, on November 21, the Kenyan Ministry of Public Health (MOPH) ordered Public Health Officials to remove all genetically modified (GM) foods on the market and to enforce a ban on GM imports following a November 8, 2012 Kenyan Cabinet and Presidential decree. This follows a French Study published in the Journal, "Food and Chemical Toxicology" in November 2012 questioned the safety of GMO food crops. The discredited Seralini study released by a French university in September 2012 linked cancer in rats to the consumption of GM foods. (Seralini, Mesnage, Gress, Defarge, Malatesta, Hennequin and Vendomois, 2012).

Later on, as Casassus (2013) reports, bowing to scientists' near-universal scorn, the journal *Food and Chemical Toxicology* on November 28, 2013 fulfilled its threat to retract a controversial paper claiming that genetically modified (GM) maize causes serious disease in rats, after the authors refused to withdraw it. Though the article was eventually recanted by the publisher but, the debate on whether GMO food crops should be allowed in Kenya, has continued unabated, with the media being used as a dissemination channel for the various conflicting views.

According to the USDA, Foreign Agricultural Service Gain report (2012), the Ministry of Public Health did not consult the National Biosafety Authority (NBA) about the proposal or ban. In addition, the Ministry of Higher Education Science and Technology, the Ministry of Agriculture and the Ministry of Trade were not consulted before the cabinet meeting.

As Macmillan (2013) reports, then permanent secretary in the Ministry of Agriculture Dr Romano Kiome, dismissed the ban on the import of genetically modified organisms (GMOs) into the country—calling it ill-advised and lacking the backing of law.

Dr Kiome said the ban cannot be enforced because it was imposed by the cabinet, which has no authority in law to do so. Although a "political stand" can hold sway for a time, it is not a

substitute for a considered professional judgement. (Macmillan, 2013). In this case, when a senior government official dismisses a decision taken by the same government he serves, this can leave journalists not sure, of which information is correct, hence the conflicting messages that they eventually disseminate. Such opposing viewpoints particularly from senior government officials leave the public not sure of the way forward, as the media endeavours to report objectively on what the news sources say.

Scientists want the government to lift the ban on imports of genetically modified organisms (GMOs) to address a looming food shortage. Speaking at the Kenya Agricultural Research Institute (Kari), the researchers said the ban was based on erroneous data linking the products to cancer, (Andae, 2013). Dr Richard Oduor, a lecturer at Kenyatta University, (cited in Andae, 2013) argues that more than five Kenyan universities already offered degree courses in biotechnology and the ban on GMO imports created a bad impression on students pursuing the course.

“When we ban GMO in the country and we have students who are pursuing those courses, it creates an impression in their mind that what they are doing is useless since they cannot execute what they were taught anywhere within the country,” (Andae, 2013)

Dr Florence Wambugu, a plant pathologist and virologist (cited in Andae, 2013) wonders why Kenya was the only country in the world that had imposed a ban on GMO imports on the basis of the Seralini study. In the past, the Kenyan print media have been the centre of confrontation between pro-GM lobbyists and the equally fervent opponents of GM crops. The media has highlighted cases where a section of Kenyans fed on wild fruits and even dogs due to hunger. But, information on GMO food crops, which are being fronted as an alternative to traditionally cultivated crops, seems scanty and contradictory as the media reaches out to divergent views. As a section of society pushes for adoption of the technology, some feel this is not the right time.

As Kakah (2015) reports, a group representing small-scale farmers moved to court to stop the government from lifting the ban on genetically modified foods. The Kenya Small Scale Farmers Forum claimed the public is not well informed about the GMOs. They claim the government has

not sought the views of Kenyans on the issue and therefore the lifting of the ban would be illegal. This came days after the current Deputy President of Kenya William Ruto (2013-2017) said that the government was considering lifting the ban. According to Ruto, genetically modified maize and cotton will soon be cultivated. Kenya will not be left behind in biotechnology. There have been distortion of information over GMO crops, but this is the type of technology that we can adopt to ensure food sufficiency in the country. (Karanja, 2015).

Journalists as purveyors of information remain at the centre of this debate and are part of this distortion that is being alluded to. This explains the importance of this study, to establish the underlying factors and propose the way forward. Kaniaru (2015) points out that NBA issued a statement saying 2014 would be the year to popularise GMOs to the Kenyan public. In apparent anticipation of the lifting of the GMO ban, NBA went ahead to invite comments from the public before approving the GMO maize developed by Kenya Agricultural and Livestock Research Organisation (Kalro).

1.3 Statement of the Problem

Although there have been journalists in Kenya covering GMO food crops, there has been little research to find out their perceptions about the coverage. Concerns have emerged that consumers are sometimes treated to conflicting positions about GMO food crops. They are left in a dilemma especially when the information is emanating from scientists who are believed to be well versed with this subject. The government has also been providing information that has been interpreted differently by various sector players. As a result, the future of GMO food crops has remained, unclear, with proponents and those opposed to GMO food crops using the media to voice their concerns. But, the media being at the centre of this debate has a duty to shove interests aside and disseminate the right information. The journalists have a duty to influence decision through provision of accurate, balanced and objective information. This should be through the quality of articles they write, which are based on the divergent views from news sources, which include the scientists, government officials, farmers, civil society and other stakeholders. Inadequate, inaccurate or biased coverage of GMO food crops would be a disservice to the journalists' target audience as they will not be able to make informed decisions. Journalists may not be receiving enough information on GMO food crops, they don't enjoy reporting on this subject, or just lack

the interest or skills to competently cover this subject. Information about the place of GMO food crops in improving food security is important, given that the country relies on food imports that fluctuate depending on weather conditions. It is thus important to find out how journalists perceive their role as purveyors of information. This study thus intended to determine how journalists communicate emerging information about GMO food crops.

1.4 Objectives of the Study

The main objective of this study was to assess how journalists communicate emerging information about GMO food crops.

The specific objectives of the study were:

- i. To establish how the placement of GMO food crops' stories in the Daily Nation Newspaper affects coverage.
- ii. To analyze the perception of the Daily Nation Newspaper journalists on GMO food crops' coverage.
- iii. To find out challenges facing Daily Nation Newspaper journalists in coverage of news.

1.5 Research Questions

- i. How is the placement of GMO food crops' stories in the Daily Nation Newspaper affecting coverage?
- ii. What is the perception of the Daily Nation Newspapers journalists on GMO food crops' coverage?
- iii. What challenges do Daily Nation Newspapers journalists face in coverage of news?

1.6 Significance of the Study

The media plays a crucial role in gathering, processing and dissemination of information. The public looks up to the media for up-to-date information on various emerging issues. Journalists as purveyors of information need to be aware of what they are writing about to elicit desirable effects. This is as the country strives to realize vision 2030, which is the country's economic blue print besides, attainment of the Millennium Development Goals (MDGs) particularly goal number one, which is to eradicate extreme poverty and hunger. Realization of the Sustainable

Development Goals (SDGs), adopted by the United Nations General Assembly in New York, which are the road map for governments and the international development community up to the year 2030 are also anchored on a proactive media.

The Cabinet ban on GMO food imports created fear and anxiety amongst Kenyans particularly, on the safety of GMO food. To date, the media has a duty to keep Kenyans informed of the unfolding events, as Kenyans wait for official government communication on the matter. The political environment surrounding GMOs where there is no clear stand over the way forward has necessitated this research. The controversial debates that have left even scientists divided over the safety of GMO food crops make this study important. The newspapers have been on top of issues, reporting on GMO food crops that are relevant to the country, given that the Biosafety Act, 2009, was passed into law by the Kenyan parliament in December 2008 to deal with the biotech crops. It received Presidential assent on February 12, 2009 (NBA, 2015).

Foreign countries with an interest in agricultural productivity have invested in biotech issues as part of their efforts to assist developing countries, improve food security. However, it has not been clear whether; the donor countries are driven by vested interests, to create a market for their products or to honestly help Kenya increase food production. The Daily Nation has been picked for this study because it leads the pack in terms of circulation and readership statistics in Kenya. This study aims at investigating how journalists communicate emerging information about GMO food crops. The study may help the partners in the GMO debate who include government officials, policy makers and scholars to be sure of the impact of journalists in pursuing their cause. The study will provide an avenue for development of appropriate strategies to enhance effective communication of the subject of GMO food crops to the public through the print media. The study could enhance public sensitization, teaching, research and attracting scholarships to study GMO food crops.

1.7 Scope of the Study

The study entailed content analysis of 89 selected newspapers from the Daily Nation Newspaper from October 1, 2012 to January 31, 2013 when debate on GMOs was at its peak, to assess the coverage for the GMO food crops. Journalists from Nation Media Group, Nairobi, which leads in

circulation and readership, participated in the study. The Daily Nation Newspaper enjoys almost 75 per cent of the market share with the highest circulation and readership figures followed by the Standard Newspaper (Ipsos-Synovate, 2011).

1.8 Theoretical Framework

1.8.1 The Diffusion of Innovation Theory

This study focuses on how GMO messages are communicated by journalists, the placement of GMO food crop stories in the Daily Nation newspapers, the perceptions of journalists about this subject, and the challenges they face in the course of their work. As a result, the diffusion of innovation theory is the appropriate theoretical framework for this study.

Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Communication is the heart of diffusion of innovations theory. The essence of the diffusion process is the information exchange through which one individual communicates a new idea to one or several others (Rogers 1995).

This explains why this study is centered on how journalists as purveyors of information communicate GMO messages. Just like an innovation, this is a technology that is still not widely understood amongst many people, hence the emerging conflicting views on whether it should be adopted or not.

In general, as Roman (2004) says, mass media are considered the best channels to create awareness about innovations, whereas interpersonal channels are crucial for persuasion and adoption of final decision. Diffusion theory emphasizes interpersonal communication more than any other area of communication research. Hence, the reason this theory remains appropriate for this study that is also focusing on a technology that relies on the journalists' good will, to be understood. In this sense, diffusion of innovations is closely linked to the study of social networks. Diffusion theory states that "individuals who are isolates or on the periphery of local social networks are less likely to hear about an innovation, will hear about it much later, and will not have as much opportunity for social comparison (Roman, 2004)

Rogers, (1995) observes that diffusion research, centers on the conditions which increase or decrease the likelihood that a new idea, product, or practice will be adopted by members of a given culture. Diffusion is the “process by which an innovation is communicated through certain channels over a period of time among members of a social system”.

An innovation just like the GMO technology, is “an idea, practice, or object that is perceived to be new by an individual or other unit of adoption”. “Communication is a process in which participants create and share information with one another to reach a mutual understanding” (Rogers, 1995). In this case GMO is considered the innovation since it is relatively new to Kenyans who are used to traditional crop production techniques. Journalists and the print media represent communications channels through which the GMO messages are passed to the target audience. Consequently, Rogers (2003) says information that creates awareness-knowledge of an innovation seldom comes to individuals from a source or channel of communication that they must actively. Information about a new idea can only be actively sought by individuals after they are aware that the new idea exists, and when they know which sources or channel can provide information about the innovation.

The four Main Elements in the Diffusion of Innovations include:

- i. Innovation , which according to Rogers (2003), an innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption. An innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them. The newness characteristic of an adoption is more related to the three steps (knowledge, persuasion, and decision) of the innovation-decision process.
- ii. Communication Channels: The second element of the diffusion of innovations process is communication channels. For Rogers (2003), communication is a process in which participants create and share information with one another in order to reach a mutual understanding his communication occurs through channels between sources.

Rogers (2003) states that, “a source is an individual or an institution that originates a message. A channel is the means by which a message gets from the source to the receiver. Rogers states that diffusion is a specific kind of communication and includes

these communication elements: an innovation, two individuals or other units of adoption, and a communication channel.

Mass media and interpersonal communication are two communication channels. While mass media channels include a mass medium such as TV, radio, or newspaper, interpersonal channels consist of a two-way communication between two or more individuals. On the other hand, diffusion is a very social process that involves interpersonal communication relationships (Rogers, 2003).

- iii. Time: According to Rogers (2003), the time aspect is ignored in most behavioral research. He argues that including the time dimension in diffusion research illustrates one of its strengths.
- iv. Social System: The social system is the last element in the diffusion process. Rogers (2003) defined the social system as a set of interrelated units engaged in joint problem solving to accomplish a common goal. Since diffusion of innovations takes place in the social system, it is influenced by the social structure of the social system.

Therefore the theory is still relevant in the present day situation. It is very practical. It lays the foundation for numerous promotional communication and marketing theories and the campaigns they support. For instance, massive use of cell phones, computers, face-book, twitter, yahoo and other internet accounts, all explains how the study of diffusion of innovation (DOI) theory has remained relevant over the years.

Anaeto, Onabajo and Osifeso (2008) see 'Diffusion of Innovation' as how new ideas and discoveries spread to members of social system. It shows that there must be something new - innovation/information that is spread through communication channels to a particular society. When there is a new idea, it is the media that presents information that makes us aware of the existence of the new innovation. However, one of the weaknesses of this theory is that it is linear and source dominated because it sees communication process from the point of view of the elite who has decided to diffuse information or an innovation. This observation fits well with journalists giving priority to personalities who include the government, scientists, politicians and little attention to farmers who constitute an important segment for the success of this technology. Sometimes, emerging issues like communication of a development plan by the government is distorted to portray the organizers positively in public because they want favours.

As Yesil (2014) observes self-censoring practices seem to be a serious threat for the future of journalism. Journalists around the world are forced with self-censoring by power players. Governments are the major players to force journalists to censor their news stories. In history, governments always wanted to control the media and made laws and regulations to put journalists under control. Journalists who dare not to obey the rules are severely punished. Using advertising as a weapon privately owned companies also put pressure on journalists. Publishers who need advertisement revenues for surviving have to accept whatever politicians and business owners told them to do. So, publishers force the journalists working for them to follow the rules. So journalists might suppress facts when reporting on an innovation like GMO food crops because they fear being blamed by their media managers for contradicting the government or advertisers. This study seeks to find out if journalists face such challenges and establish the way forward.

The theory can form a reference point on how journalists view GMOs. The theory can be used to explain the aspect of GMO reporting that deal often deal with. The theory forms a scholarly foundation to explain the perspective and viewpoints that have emerged concerning the study of journalists and GMO food crops' coverage. Most scientists find the image of genetic engineering in the media wrongly presented and the risks dramatically exaggerated. The scientists often doubt the professional competence of journalists. Science journalists in return, however, consider scientists working in industry as being competent, but as not very trust worthy. This knowledge gap explains the relevance of the diffusion of innovation theory to bring out how ideas are misrepresented (Kepplinger, Ehmig and Alheim, 1991). Journalists communicate with the sole purpose of educating, informing or entertaining their target audience. The messages being disseminated must be timely to resonate well with the target audience. Therefore, understanding how journalists perceive the messages they relay to the public, their challenges will lead us to reliable ways to improve their work. This makes this study important.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section reviews literature material and research studies conducted on the status of GM crops research, how the placement of GMO food crops' stories in the Daily Nation newspaper affects coverage, perception of the Daily Nation Journalists on GMO food crops' coverage, and challenges facing Daily Nation newspaper journalists in coverage of news.

2.2 How the Placement of GMO Food Crops' Stories in the Daily Nation Newspaper Affects Coverage

The media play a central role in informing the public about what happens in the world, particularly in those areas in which audiences do not possess direct knowledge or experience.

Hofmann (2007) observes that in claiming that the media exerts a specific influence in shaping public perceptions, it is unclear whether it simply drives public perceptions, for example, by influencing people's emotions and stressing certain values or whether merely reflects an information demand to respond to an 'ongoing debate.' These values are stressed based on placement of news articles on a page with the front page and the back page being the most sought after due to ease of the articles to be seen.

Eye movements are thus an integral part of newspaper reading. During news reading continuous shifts in visual focus are required, and these attention shifts are accompanied by corresponding changes in gaze position (Homburg 2004). This explains the importance of including placement of stories in this study that seeks to assess the level of coverage of GMO food crops. News stories placed in the inside pages cannot enjoy the same readership level as those on the front and back pages.

In addition, placement of content was considered implicitly, since the placement of messages affects the actual exposure of media messages about an issue. In their study, Mc Comb and Shaw (1972) as cited by Lee (2006) classified news stories into two categories such as major and minor stories in terms of amount and placement. They defined major news stories as lead stories on the front page or stories with a three column title as well as five paragraphs at a minimum in

newspapers. In most cases, lead stories in television news and front page stories have advantage in being exposed and they would occupy more space or airtime than other stories.

Brossard et al, (2007) said attitudes depend on subjective knowledge; there is no doubt about that. However, it is not clear what kind of knowledge is relevant for attitudes towards biotechnology. According to a widespread belief, discrepancies between the assessment of technologies by experts and attitudes on the part of the population are caused by the knowledge gap between experts and lay people. This has always been a bold assumption, because experts and lay people differ in more respects than just knowledge level-in the amount of control over technology and in the benefits they draw from their involvement in technological development. Cultural anchoring (framing) of food biotechnology, through visual communication elicits different responses. Some illustrations like a ripe tomato or maize cob with an injection on it to illustrate a GMO crop in a newspaper article, might affect readers and the journalists' perceptions and sway how they perceive GMO products.

Therefore when such frames are placed in a newspaper and the more they are used will make the messages to stick in the readers' minds.

The Centre for accountability in Science (2016) report indicates that even the respected BBC has been criticized for its fringe science coverage, which includes global warming, vaccines and GMO food crops. An independent report by Professor Steve Jones, emeritus Professor of genetics at the University College London, "lamented the narrow range of sources that reporters used for stories, poor communication between journalists in different parts of the organization, and a lack of knowledge of the breadth of science." This explains why this study was important to determine from the journalists perspective if these are indeed their concerns, as well. Journalists often seek out an expert to provide the opposite view or a critical look at new scientific research. Usually, the inclusion of opposing views is an important part of producing reliable journalism, but the quest for "balanced coverage" in science reporting often gives an amplified platform for fringe viewpoints. The report indicates that when minority views are sometimes given equal weighting to broad scientific consensus, a "false balance" is created.

2.3 The Perception of the Daily Nation Newspaper Journalists on GMO Food Crops' Coverage.

Studies by scholars like Kimenju, Grootte, Karugia, Mbogoh and Poland (2005) and Gathaara, Ngugi, Kilambya and Gichuki (2008) to gauge consumer perceptions on biotechnology and GMO crops in Kenya established low levels of consumer awareness at between 34% and 38.6%. Most consumers with information about biotechnology heard it mainly through the mass media and from newspapers in particular, according to the studies. This explains why the focus of this study on newspapers is important to capture the journalists' perceptions about coverage of GMOs, identify emerging challenges and recommend the way out.

Gaskell and Bauer (2006) observe that news production can be understood as the process through which complex issues are reduced to journalistically manageable dimensions, resulting in a particular focus on an issue. Framing leads to selection; for example, journalists rely heavily on the information of particular sources (Gutting, Olofsson, Fjaestad, Kohring, Goerke, Bauer, and Rusanen, 2002) and observe each other in order that they do not miss a good story. These processes result in media outlets individually and collectively highlighting some aspects of biotechnology at particular times, but also ignoring others completely. Ideas about the power of the mass media are both a source of public confidence and a source of public concern.

Communication professionals mostly take an instrumental view of mass media as a lever for perception management. Mazur's study as cited in (Gaskell and Bauer, 2006) published probably the first model of media coverage and public perception over controversial technologies. He observes that 'the rise in reaction against a scientific technology appears to coincide with a rise in quantity of media coverage, suggesting that media attention tends to elicit a conservative public bias' (Gaskell and Bauer, 2006). However, increased information flow will normally not result in an equally informed public. The better educated are able to use the media more efficiently than the less well educated. And as a result, knowledge gaps between social groups will increase. The knowledge gap hypothesis is well supported by empirical studies, and receives support over biotechnology. For instance, in contrast to the globally growing use of GM plants in agriculture, the acceptance of GM food is still low in the European Union (Baram and Bourrier, 2010).

Therefore, the study would strive to find out whether journalists feel it is all about quantity of coverage, news sources involved or the controversial nature of the debate that determines the direction the messages on GMO food crops, should take. Bonfadelli as cited in (Gaskell and Bauer, 2006) reports considerable variation in knowledge of biotechnology across and within countries, and shows that knowledge gaps increased with increases in media coverage after 1997. This implies that most citizens are yearning for more information seemingly to quench the knowledge needs as the media continues to report GMO food crops issues. Indeed, as the National Biosafety Authority (2013) report on experts' meeting states that public knowledge, attitudes and perception of biotech products are important factors, which determine ultimately whether GM technology will become an important contributor in dealing with some of the world's challenges, especially in food security. Therefore, as the media reports on what the public views are, it is equally important to understand these journalists' perceptions on this subject, as that can also influence the level and nature of coverage.

2.3.1 GMO Coverage in East Africa.

In many ways, the GMO debates in Kenya, Tanzania and Uganda mirror global trends. As the agriculture sector in each country continuous to develop, so do the highly polarized debate on GMOs, similar to the strife experienced in the United States of America and Europe. The absence of commercially available products and significant communication gaps among key stakeholders compound the confusion. Furthermore, there are few individuals with firsthand experience with GMO seeds who can serve as strong voices explaining the technology. In the three focus countries, politicians and the public will have to become more engaged with objective scientific evidence that articulates exactly what technology is, the potential yet still hypothetical risk, and how it might address food security challenges. Over the last two decades, debates in Africa around transgenic technologies have been mired in controversy (Wedding and Tuttle, 2013). The CSIS report recommends that Agriculture and science journalists desire training and recognition for their work. Awards for outstanding journalism help promote strong and neutral reporting.

But, as this happens, a study has not been done to capture the journalists view about how such developments have influenced the level of their coverage of science topics like the GMO food crops. Burrows (2014) says that Education Cabinet Secretary, Prof Jacob Kaimenyi, (2013-2015)

in a statement during celebrations to mark the National Biosafety Authority's (NBA) ISO 9001:2008 certification in 2014, urged the authority to step up its efforts at sensitizing Kenyans on GMOs. This implies that the NBA has to include the media in the sensitization campaigns hence the importance of journalists as purveyors of information on GMOs food crops.

"I urge the Authority to create more public awareness on biosafety especially at this time when the country is preparing to commercialize GMO products in Kenya. Many people in Kenya do not yet differentiate between a big tomato and a GMO," Burrows, (2014), citing the Cabinet Secretary.

This supports the perception that there is misunderstanding over the GMO food crops, and hence the fears that journalists might also be passing on, conflicting messages. Therefore, there is need for such a study to ascertain if journalists as purveyors of information are improving on how they disseminate information to the public.

Wedding and Tuttle (2013) in their report of the Centre for Strategic and International Studies (CSIS) Global Food Security Project, observe that in Uganda, science communication has been a priority. Along with research and regulations, there has been a concerted effort to connect the scientific community with journalists. An association of science journalists has been formed to encourage high quality reporting on all aspects of science; and an active dialogue among scientists, policy makers, journalists and activists has provided an opportunity to discuss and clarify key questions and issues around biotechnology. As a result of the consistent national discussion about the potential roles of GMOs in combating food security bolstered by regular media coverage, nearly everyone interviewed had a similar understanding of the issues, and a common approach on the importance of the technology to Ugandan farmers.

Vestal and Briers (2000) observes that science for many, journalists included, is a complex discipline. Mazur's (1981) study found that, although few consumers disapprove of biotechnology, media coverage that gave the appearance of a dispute benefited opponents of the technology. The International Food Information Council (1997) reminds us that mass media play an important role and serve as gatekeepers of food and health information. These gatekeepers

control many of the written and oral messages by which consumers base their perceptions, attitudes, and behavior, (Vestal and Briers, 2000)

Rogers (1983) and Terry (1994) indicated the most important factor contributing to consumer awareness and understanding about science and technology is mass media (as cited by Vestal and Briers, 1999). But, we do not know journalists' knowledge about biotechnology or their perceptions about GMO food crops to be sure that they are indeed passing the right message to the target audience, as the people's watchdog role. Rogers (1983) reiterated that mass media are the primary source to increase people's awareness about agriculture. He continued that mass media have great influence on public perception, influence he calls the Hypodermic Needle Model, which causes "direct, immediate and powerful effects" (p. 272) by figuratively injecting information into society. This explains why it is important to understand how journalists entrusted with such a highly regarded undertaking, think about their work, less they will just communicate but the coverage will not have an impact on their intended audience.

Hofmann (2007) observes that though little is known about the process whereby the media influences public perceptions in the area of biotechnology, the link between public 'acceptance of biotechnology and the extent of media coverage is an important contemporary question to address empirically. This explains why it is important to establish further how journalists communicate to the masses and how the coverage can be improved by addressing emerging challenges. Wedding and Tuttle, (2013) observes that the press in Kenya is sophisticated, yet it disseminates inaccurate information about GMOs. It is essential to promote balanced and accurate media coverage of this issue because as more people are exposed to it, the more likely they are to understand it and determine informed preferences for their farms and goods they purchase. It is thus critical to establish if indeed their perceptions are in cognizant of such observations and if this informs their approach to matters touching on a sensitive topic like GMO food crops.

Brossard, Shanahan, and Nesbitt (2007) quoting (Kepplinger, Ehmig and Alheim, 1991) showed that scientists are not only quoted with respect to their factual knowledge but, are also the main source of evaluations in the media coverage of biotechnology (apart from the journalists

themselves). 'The media are so deeply embedded in the structure of society and in the processes of cultural reproduction that it is quite safe to say that they are an important part of a system in which public discourse among social actors revolves around issues and in which individuals are linked to the public sphere by two processes: the reception of media coverage by the audience and the anticipation of the audience's relevance structure by journalists' (Brossard et al, 2007, p.89).

Brossard, Shanahan, and Nesbitt (2007) added that several media effects are well accepted, such as agenda setting, diffusion of knowledge and cultivation, that is, the shaping of the recipients' subjective realities by characteristics of the media coverage. While it is quite obvious that the media are an important means for average media users to generate opinions on and attitudes to subjects of which they have no direct experience, it is surprisingly difficult to actually prove these effects. Wedding and Tuttle (2013) observes that there is still limited knowledge about GMO crops across many parts of society, including consumers, politicians, the media and importantly, small holder farmers. Although Kenya devoted significant resources to developing a biotechnology regulatory structure, the debate will remain largely theoretical until there is a product on the market. There is a need for increased public dialogue on GMOs as there is still a fair amount of uncertainty over the safety of the technology among the general public, smallholder farmers and some politicians.

2.4 Challenges facing Daily Nation Newspaper Journalists in Coverage of News.

Most citizens depend on the media to raise their awareness and to provide information and image of things to come (Gaskell and Bauer 2002). But, In polemic mode, as Gaskell and Bauer (2002) points out, the media are often blamed for causing the 'difficulties' in which some sectors of the biotechnology movement find themselves; the media misinforms the public and thereby stir up irrational anxieties.

According to a report from the National Biosafety Authority (NBA) expert consultative meeting held in Nairobi in January, 2013, consumers are sometimes treated to conflicting positions about GMO food crops, through media coverage. Latham (2014) says that while the media in general has recently taken much criticism, for trivializing news and other flaws, the science media has

somehow escaped serious attention. This is unfortunate because no country in the world has a healthy science media. Good journalism examines its sources critically, it takes nothing at face value, places its topics in a historical context, and it values above all the public interest. Such journalism is, most people agree, essentially to any equitable and open system of government. These statements about journalism are especially applicable to the science media. The study was important in determining if the journalists themselves share the same views.

Evenson and Santaniello (2004) point out, a number of journalists focused on risks and expressed stand points opposed to GMOs, sometimes entering into opposition movement themselves. This can be explained by the characteristics of the journalistic profession and the strong competition within the media sector. Shocking headlines revealing hidden dangers and dramatic presentation of issues guarantees wider audiences and have more impact than more moderate, qualified articles; hence, this tendency to overstate and try to outmatch one another.

Furthermore, As Evenson and Santaniello, (2004 points out, the communication methods of associations opposed to GMOs often guaranteed them a strong impact in the media. These associations focused on spectacular actions announced in advance. Pictures of activists chained to or climbing on to strategic or symbolic places, photographs of large protest banners, destruction of transgenic crops, and so on, had every chance of receiving extensive media coverage due to their characteristics and attractiveness. Likewise, their press communiqués were particularly lively, stimulating and clear, and their websites well documented. This is the typical situation in Kenya, where the civil society has mainly focused on such spectacular actions to attract media attention as scientists exercise caution with what they say.

No statements were issued to clarify the matter when facts or controversies on specific points concerning GMOs were mentioned in the media (which was very often). As a result, explanations and interpretations disseminated very widely among the general public were often those from associations opposed to GMOs. Researchers from public research organizations were interviewed, but they were often quoted too selectively (or partially) in articles that mainly reflected the viewpoints of associations opposed to GMOs. In addition, the views expressed by scientists tend to be complex while those expressed by opponents are very loud and clear:

'GMOs are dangerous, we must ban them' (Evenson and Santaniello, 2004). Hence, this confuses the public and journalists dealing with the subject as the media have a duty to bring out the stories as they emerge without taking sides.

As a result of threats, Yesil (2014) argues that journalists choose not to write against the interests of any power players. They hide the facts they have already discovered, they cut any information which they think will bother the power players and even they do not want to make any search on any sensitive issue which they cannot write the truths about. This is called self-censoring. Both the studies conducted by scholars in the last decade and the statements of participating journalists put forward enough evidence that many journalists around the world practice self-censoring. Political, economic and social pressures and life threatening actions are forcing journalists to self-censor. Journalists, who are supposed to inform the public about the events happening around the region they live, are unable to do their task for fear of losing jobs even their lives. Consequently, self-censoring practices of journalists has put the future of journalism into danger. Preventing self-censoring is not an easy task but educating journalists and providing them a safe environment to conduct their search and publish their news stories may be helpful. There is need to establish if the GMO debate has taken the same approach with journalists being careful not to endorse a technology that the government is skeptical about.

Food biotechnology is a particularly controversial and politicized field and hence we would expect a much higher proportion of sources and actors mentioned from politics (national, EU and international), business and NGOs than in the biomedical fields, (Latham, 2014). Initially, as Evenson and Santaniello, (2004) argues, the subject of biotechnology was covered by scientific journalists who were relatively in favour of it. Later, when the topic became more politico-economic, it was also covered by other journalists. Another explanation lies in the characteristics of the journalistic profession and the strong competition within the media sector. Shocking headlines revealing hidden dangers and dramatic presentation of issues guarantee wider audiences and have more impact than more moderate, qualified articles; hence, this tendency to overstate and try to outmatch one another. Indeed, this explains why most stories captured by the media might be those that focus on the dangers of GMO food crops or emerging controversies as opposed to just being an alternative to tackle food insecurity.

Latham (2014) observes that evaluation methods in public organizations urge them (researchers) to publish in highly specialized scientific journals far more than in magazines for the general public or popularized science magazines, and to participate in scientific conferences rather than in debates with the general public. In fact, the latter forms of publicizing results are even frequently discredited in the scientific world. Even if researchers have participated in public debates, in total these have reached only a very small audience.

Public research has, moreover, published relatively few books or statements for the general public on GMOs. It has participated in many fairly specialized scientific conferences on this theme, but these have received little attention outside scientific circles. Media covers both sides-supporters and opponents of GMO food crops. It thus contributes to a mix of ideas that eventually confuses an average reader, (Latham, 2014).

The available content analysis agrees that scientific actors and sources are most important in the coverage of biotechnology in general, more important than sources from politics, business and interest groups (Hempel, Pfennig, Kohring, Gorke and Ruhrmann, 2001). However, these other sources particularly the politicians cannot be wished away as they wield a lot of power and influence on media coverage. Mwale (2011) observes that part of the inability of the media to communicate GMOs is rooted in the fact that the communication falls in the mode of 'debate' rather than in the journalisticly more familiar modes of scientific knowledge and information 'dissemination' and 'civic education', especially on GMOs and things biotechnological in general. Wedding and Tuttle (2013) point out that, the debate over biotechnology in Kenya, especially at the scientific and political levels has taken place over many years. Scientists, high level government agriculture officials and commercial farmers are generally receptive to the technology. Public opinion shifted as activists against research and planting of crops diminished, but a new focus has since emerged around labeling requirements. Research by other scholars has revealed that Kenya is one of the five developing countries with challenges in producing well analysed media messages on GMO food crops. Most news articles are mainly based on press releases from government agencies (Panos Institute 2005). This implies that the media and specifically the newspaper journalists that many people rely on for information GMO food crops are not churning out adequate and well researched information on this subject. Over the period under study, Kenyan consumers may not have received factual and objective information on GM

technology, a subject that is likely to increase as Kenya makes strides in commercialization of GMO crops, unless challenges facing journalists when reporting on GMO food crops are identified and addressed.

In very complex and controversial cases such as GMOs, for example, either, the adoption of precise standards or the clarification of status of GMOs by a World Trade Organization (WTO) panel or appellate body in the international framework might be necessary in the future (Velthuis, Unnevehr, Hogeveen and Huirne 2003). Policy-making disagreements deserve more positive coverage than it currently gets, although negative coverage is not always unwarranted. The inadequate coverage of GMO food crops, as identified by Panos Institute (2005), could be resulting to poor awareness levels by the public as indicated by past studies. If the journalists do not communicate in a balanced and objective manner, the public might find it difficult to make informed decisions about GMOs.

In Kenya, research on GMO food crops has been limited to maize, sweet potato, and cassava with the aim of developing crop varieties that are insect-resistant or virus-resistant. The technology has not been applied on a wide scale and has been limited to laboratory and confined field trials (Kameri-Mbote, 2005). However, conclusive studies have not been done in Kenya on the safety of the crops or how journalists communicate the research undertakings yet as Crawley (2007) argues, in the case of controversial scientific topics like GMOs, the news media can choose to frame the issue either from the perspective of risk or of a scientific opportunity.

The Seralini study that Kenya relied on to announce a ban on GMO food crops imports is a typical example of a foreign study that the media used to elicit debate on the safety of the GMO food crops. The debate has continued to date without a tangible way forward raising concerns on whether the media is providing well researched information on this matter or just relying on press statements. Hence this study ultimately had to inform how the media can improve on coverage of GMO food crops by highlighting the areas that need urgent intervention.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, we discuss methodology. This includes the research design, study area, study population, sampling procedures, data collection methods, and data analysis and ethical issues that are important to the study.

3.2 Research Design

The study adopted descriptive research design to obtain the opinion of the respondents, as it involves gathering information from only a part of the total population. Descriptive research can be either quantitative or qualitative. Interviews, which have been used in this study are some of the common data collection methods applied to questions within the realm of descriptive research. Descriptive statistics tell what is, as in this case the study seeks to find out the level of coverage of GMO food crops in Kenya. It seeks to analyze perception on coverage of GMO food crops. What and how questions as captured in the study are best analyzed through a descriptive research. Descriptive research involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data collection (Glass & Hopkins, 1984). It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Because the human mind cannot fully extract a large mass of raw data, descriptive statistics are very important in reducing the data to manageable form. When in-depth, narrative descriptions of small numbers of cases are involved, the research uses description as a tool to organize data into patterns that emerge during analysis. Those patterns aid the mind in comprehending particularly a qualitative study and its implications.

3.3 Study Area

This is a thematic study area of GMO coverage. It involved coverage of GMO food crops in Kenya by the Daily Nation Newspapers. A total of 89 Daily Nation newspapers for the months of October, November, December, 2012 and January 2013 were used. Out of which GMO stories were found to have been used 21 times in 18 newspapers. Ten respondents that constitute the sample size were used in a pilot study, which is a pre-study that is a crucial element of a good study design meant to inform the researcher on the strength or weakness of the proposed study.

3.4 Study Population

The study population for this study was the Daily Nation Journalists based at the company's head office. A total of 32 journalists as captured in the company's official record for daily assignments, known as the diary book constituted the population. This group, though drawn from the print media covers different beats, which include business, politics, parliament, sports and courts. All stories on GMO food crops in the 89 newspapers have formed the study population, for the content analysis.

3.5 Sampling Procedures and Sample Size

The study used non-probability (purposive) sampling procedure to select the sample from the sampling frame. This is where the units being investigated are based on the judgment of the researcher. It involves choosing a case because it illustrates some feature or process in which we are interested in. The technique has also allowed the researcher to focus on particular characteristics of a unit that are of interest, which has best enabled the study to answer the research questions. Therefore, the study has used purposive sampling to identify and select news stories on GMO food crops from study population of 89 newspapers for a quantitative and qualitative study from October 1st, 2012 to January 31st, 2013, for the content analysis. 18 newspapers that generated a total of 21 stories on GMO food crops constituted the sample size. Patton (1990) says the logic and power of purposive sampling lies in selecting information rich cases for the study in depth. Information rich cases are those from which one can learn issues of importance to the purpose of the research. The study population was all articles on GMO food crops published in the Daily Nation Newspaper between October, November, December 2012 and January 2013. An initial search of the online databases of the respective newspapers was carried out using search terms like, 'GMOs', 'GM', 'GM crops', and 'genetically modified' to select articles to constitute the sample. The database search was complemented by a physical search of the library archives of the Nation Media Group to verify that all articles on GMO food crops for the study period have been captured.

The purposive sampling procedure also was used to select journalists who participated in the study to provide qualitative data mainly about their perception on GMO food crops' coverage, challenges and ways to improve this coverage. Multistage sampling method was used where the researcher stratified the population of 32 Daily Nation Newspaper journalists, into those

covering Politics, Sports, Parliament, Health, environment, business, agriculture, Courts, and Crime and finally those who have no specific area of coverage. A sample size of 10 respondents was then obtained through the purposive sampling technique, because primary data needs to be obtained from a specific group of respondents covering Health, business, environment and agriculture segment. Those who have not covered GMO food crops were thus left out of the study. Purposive sampling was used to select Daily Nation newspaper in line with the objective of the study which was to analyze this publication. Circulation and readership were the criteria used for selecting the Daily Nation as it is the leading daily paper. (Nation Media Group 2015).

3.6 Data Collection Methods

Qualitative and quantitative data was collected using both primary and secondary sources. Interview schedules and observation checklist were used to obtain primary data from journalists and the Daily Nation Newspaper for the four months under study, respectively.

Interview schedules were used to generate qualitative data from the journalists whereas a checklist provided quantitative data. The researcher used open and close ended questions to collect data for analysis, from the journalists. These included data on the challenges they face when reporting on GMO food crops and their perceptions about coverage of GMO food crops.

For content analysis, news articles that directly related to GMO food crops in the database search were included in the content analysis. They included those that at least one of the search terms appeared in the headline, the first paragraph, or more than once in the entire article.

Interview schedules

The study employed the use of interviews to collect data. The purpose of conducting personal interviews is to explore the responses of the people to gather more and deeper information. They are used to probe the answers of the respondents and at the same time, to observe the behavior of the respondents, either individually or as a group.

The researcher interviewed ten journalists from the Daily Nation who constitute the sample size for the study. The interviews were captured using an audio recorder. Recording the interviews gives the researcher time to concentrate on the flow of the conversation and to direct the interview appropriately without worrying about taking elaborate notes.

Interviews can be semi structured or structured. In semi-structured interview, the interviewer has a general idea of where he or she wants the interview to go and what should come out of it. The

interviews also enable the researcher to develop a relationship with the participants. The study employed the use of a semi-structured interviews.

Jwan and Ong'ondo (2011) states that data is mainly made up of words, the words may exist in oral forms, for example as they are spoken by participants during the interviews. Some data may exist in written form for instance documents and journals. We have also observational data usually made up of notes taken by a researcher as he interacts with participants. There are numerous techniques of data generation a qualitative researcher could use.

Observation check list

The study has involved content analysis of the Daily Nation Newspapers at the NMG library. The newspaper library at Nation is a digitized library. Therefore for content analysis, the study relied on GMO food crops stories accessed from the Nation newspapers in the PDF format. The researcher looked at the headlines and identified the stories on GMO food crops. The researcher also looked at the number of published stories on GMO food crops; their placement in the papers and content aspects of such stories was taken as the unit of analysis.

Data on coverage, which include month when the story is used, size of the story to determine whether it occupies a brief, quarter, three quarter or full page and nature of the story in terms of whether it is against, in support or neutral about the technology, was obtained from the Daily Nation newspapers from October 1, 2012 to January 31, 2013, through content analysis. An observation checklist guided the researcher in obtaining data from the newspapers.

3.7 Data Analysis and Presentation

The study has involved thematic analysis as the data analysis strategy. This is because thematic analysis allows for flexibility in the researchers choice of theoretical framework. This kind of flexibility leads to rich, detailed and complex description of data. Individual stories on GMO food crops have formed the study's unit of analysis. The study has also employed the use of narrative method in data analysis and presentation. Data from the study was coded and entered in the Statistical Package for Social Sciences (SPSS) version 19. Responses from the interviews emanating from structured and semi structured questions were analyzed using descriptive statistics (means, percentages, and frequencies), which summarize a set of data.

Content analysis was carried out on the newspapers under study, for a period of four months from October 1, 2012 to January 31, 2013, to find out the extent of coverage of this topic, to tackle the first objective under study. Thereafter, the findings were presented through charts and tables. Frequencies were calculated for the variables of interest to the study were then analyzed by way of quantitative descriptive statistics (counts and percentages).

3.8 Validity and Reliability Tests

To check on possible bias and distortion, reliability and validity tests were done.

Reliability refers to the extent to which assessments are consistent. A pilot study was conducted on the ten respondents where they were taken through the questions before areas not clear, were fine tuned. An initial search of the online databases of the respective newspapers was carried out using search terms like, 'GMOs', 'GM', 'GM crops', and 'genetically modified' to select articles to constitute the sample. The database search was complemented by a physical search of the library archives of the Nation Media Group to verify that all articles on GMO food crops for the study period have been captured.

Validity refers to the accuracy of an assessment. This is whether or not it measures what it is supposed to measure. The questions in the interview schedules were counter checked against the objectives to ensure they respond to the issues being investigated. It was essential, for the interviewer to have a good grasp of the study's objectives, and of the information that is to be collected. This enabled well-coordinated probing to elicit the right data required, and ensure all relevant issues are covered correctly. Furthermore, the researcher was able to justify why particular questions were part of the study.

3.9 Ethical Issues

The respondents were informed about the objective of the study, to enable them to open up and freely share their views. Before data collection, questions regarding procedures were addressed and the consent of the participants was sought well in advance. Permission to conduct the study was sought from the NMG editors.

Anonymity of the respondents in the study was guaranteed by using numbers and not the names of the respondents. As a result, they felt assured of their right to privacy. The researcher made the respondents feel easy by requesting to know when they are available to respond to the questionnaires and timing the visits to correspondent with the agreed time.

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter contains the analysis of interviews and the content analysis sheet for data from respondents and newspapers, used in answering the research objectives on the coverage of Genetically Modified Organism (GMO) food crops by the Daily Nation Newspaper of Kenya. It focuses on data analysis, results presentation and discussion of the findings. The research findings are presented in form of narratives, tables and figures.

4.2 The Placement of the GMO Food Crop Stories in the Daily Nation Newspaper

To assess the placement of GMO food crops, the coverage of GMO food crops at the selected months was studied using core indicators such as frequency of publication, size of a story on a page, and whether it is in support or against the GMO technology.

4.2.1 Placement by Page in the Daily Nation Newspaper

The study sought to know how the GMO food crops are used on various pages of the newspaper to establish the prominence attached to the stories.

Table 4.1 Placement by page in the Daily Nation Newspaper

Page	No of Stories	Percentage
1 -5	0	0
6 – 10	3	14
11 – 15	4	19
16 – 20	7	33
21 – 30	5	24
31 - 35	0	0
36 – 40	0	0
41 -45	0	0
46 – 50	0	0
51 – 55	0	0
56 - 60	2	10
Total	21	100

Source: Field data (2015)

From the findings, no single news article on GMO food crops was placed between the front page and page 5. The stories were mainly on page 6-30 with pages 6-10 having only three (14%) stories, 11-15 had four (19%) stories, 16-20 had seven (33%) and 21-30 five (24%). This shows that GMO food crops news stories were not given prominence based on their placement on pages. The back page, which is also considered a prime page, had only two stories (10%) for the entire four months of study. This shows that news stories on GMO food crops were not given prominence in terms of their placement by page. This suggests that the GMO food crops stories lacked the main components of a lead or major story that can end up in the initial pages of the newspaper, which are considered as the most important. This can be linked to editorial policies that offer guidance on what should be considered before stories qualify from the initial pages of a newspaper.

However, for the whole period under study, only two news stories were used on the back page that is also considered a key area for major stories. The stories were about a controversy, confirming observations that dispute on GMOs issues attract media attention. The raging debate on whether the GMO food crops should be cultivated in Kenya or not has seen many stories used unlike when talking about the food security aspect of the food crops.

4.2.2 Frequency of GMO coverage between October and January 2013

In this study, the level of coverage of GMO food crops was determined through content analysis to ascertain the number of times the stories have been published under the four months of the study, in the Daily Nation Newspaper. The results were as shown in the table below.

Table 4.2: Frequency of GMO Coverage

Month	Frequency	Percent
January 2013	2	9.5
October 2012	8	38.1
November 2012	8	38.1
December 2012	3	14.3
Total	21	100

Source: Field Data (2015)

From the findings presented in Table 4.1 more stories were used in the months of October and November each 38.1% (8) compared to 2 stories during the month of December 2012 and 3 in January 2013 out of a total of 21 stories published during the four months under study. Notably, the months when more stories were published were just after the Serallini study had been released and there were many reactions from various stakeholders. Later on, the matter had settled down hence the little coverage in January. This explains the disparities in use of stories on this subject implying that the topic is not covered on a daily basis. This is despite (Berger, 2005) underscoring the importance of the media role in educating people about complex issues. Within journalistic practice, the media are expected to be facilitators of public deliberations in general as well as provocateurs of public debate in particular (Berger, 2005).

This finding is also consistent with information obtained from journalists during the period of study where they said that they rarely write stories on GMO food crop issues.

According to Karembu, Otunge and Wafula (2010), the initial media coverage of the events as news stories, was followed by a flurry of media debate in the form of feature articles and letters to the editor, both for and against GMOs. This shows the rationale behind study focusing on the news articles published by journalists on GMO food crops, as through such articles, more reactions come in as more interested parties joining the debate.

4.2.3 Size of Story on a Page

The study intended to measure how GMO food crops are used in terms of the space they occupy on the newspaper compared to other stories on a given page to determine if they are significantly treated. The results were obtained and presented as shown in the Table 4.6.

Table 4.3: Size of Story Allocation in Daily Nation Newspaper

Size of story	Frequency	Percent
Brief	1	4.8
Quarter	17	81.0
Half page	0	0
Three quarter	3	14.3
Full	0	0
Total	21	100

Source: Field data (2015)

The focus the GMO food crops are given on a page could also be due to issues being covered being controversial in nature, as supported by Santaniello, Evenson and Zilberman, (2002) who point out that controversy on GMO food crops, have led to increased flow of information from the mass media in Kenya making more people aware of the subject. However, the focus should be to make them understand the subject through well packaged information.

As the diffusion of innovation theory says, information about a new idea can only be actively sought by individuals after they are aware that the new idea exists, and when they know which sources or channel. Therefore, it is clear that as the journalists appreciate the main sources of information on GMOs, they will have more to write about the subject and be able to attract a sizeable space in the newspaper.

4.2.5 Nature of Story on GMO Issues

The researcher sought to know if the stories published support, are against the technology or are neutral implying they don't support either side. This was meant to establish if the kind of stories the management prefers on this subject to compare with the respondents' perception on selection of stories. The results were as shown in the figure 4.2 below:

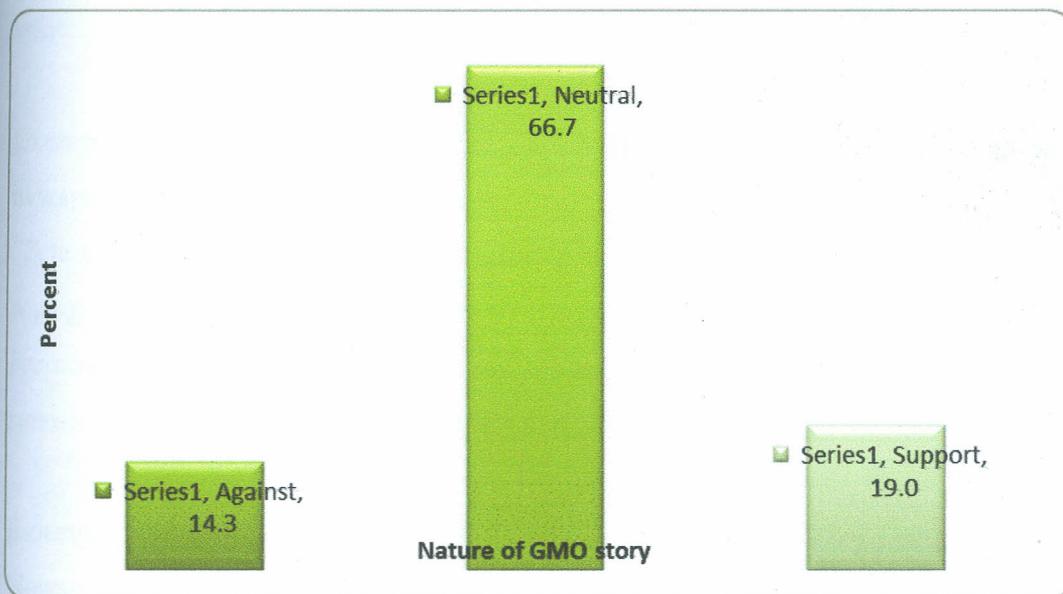


Figure 4.1: Nature of Story on GMO Issues

Source: Field data (2015)

The findings indicate that there were more articles with a neutral tone towards GMO food crops (66.7%) compared to 14.3 % of the stories that are against the technology and 19% that are in support. This implies that the newspaper strives to include views for and against the technology in the stories published as per the people they interviewed but, not necessarily making a decision on whether the GMO food crops are appropriate for Kenya or not. Though providing the pros and cons, is an objective coverage as it indicates that the reporting style is not biased to one side, readers might still not be able to make an informed decision based on the stories. This could explain why Kenyans are still in a dilemma over whether the country should adopt the technology or not. Wedding and Tuttle (2013) observes that there is still limited knowledge about GMO crops across many parts of society, including consumers, politicians, the media and importantly, small holder farmers.

Articles coded as 'support' stressed the benefits of genetically modified foods and downplayed the possible risks. Any media coverage that focused on the negative aspects of genetically modified food and portrayed the issue in a negative way was categorized as 'against'. Articles coded as "Neutral" demonstrated equal coverage of both sides of the issue of genetically modified food. Articles in this category debated both the advantages and the disadvantages of the issue.

Example of news story in support of GMO food crops as reported in the Daily Nation newspaper:

"Scientists yesterday faulted the Cabinet's decision to ban Genetically Modified food imports, saying the move was politically motivated. The scientists said the decision was uninformed because the law is clear on how GM foods in the country should be handled and the safety surrounding the products".-Daily Nation, 10 November 2012.

Example of news story against GMO food crops as reported in the Daily Nation Newspaper:

"The government has banned the importation of genetically modified foods with immediate effect. Consequently, Public Health and Sanitation minister Beth Mugo ordered public health officials to mop up any GMO (Genetically Modified Organisms) that might be circulating in the

market adding that experts would meanwhile study the health effects of the foods,” *Daily Nation*, 22 November, 2012.

Example of news story neutral on GMO food crops as reported in the Daily Nation newspaper:

“Teaching on genetically modified crop production technology should be made part of the education curriculum to help in inform the debate on the viability of the technology in addressing food security in Kenya”. *Daily Nation*, 5 February, 2012

4.3 Perceptions of the Journalists on GMO Food Crops Coverage

To assess the journalists’ perceptions on GMO food crops’ coverage, the journalists were asked the following questions. This was important to understand what journalists feels about the subject they cover, as the perceptions would have a bearing on how effective they tackle the issues.

4.3.1 Frequency of Stories on GMOs Food Crops done by the Journalists

The respondents were asked how frequent they write stories on GMO food crops.

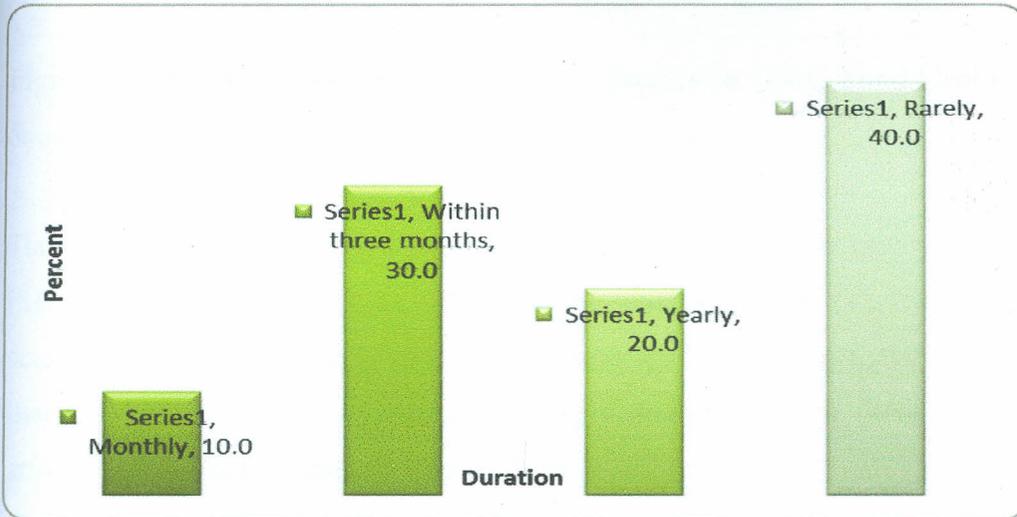


Figure 4.2: Frequency of doing GMO Food Crop Stories

Source: Field data (2015)

From the graphs above, majority of the respondents (40%) said they rarely write stories on GMO issues whereas 30% said they write such stories within three years while 20% write them annually. A small number (10%) said they write the stories on a monthly basis. This implies that this subject is not a daily occurrence and the journalists only cover the subject, when there are developing issues.

4.3.2 Sources of Information on GMO Food Crops

The respondents were asked their main sources of information.

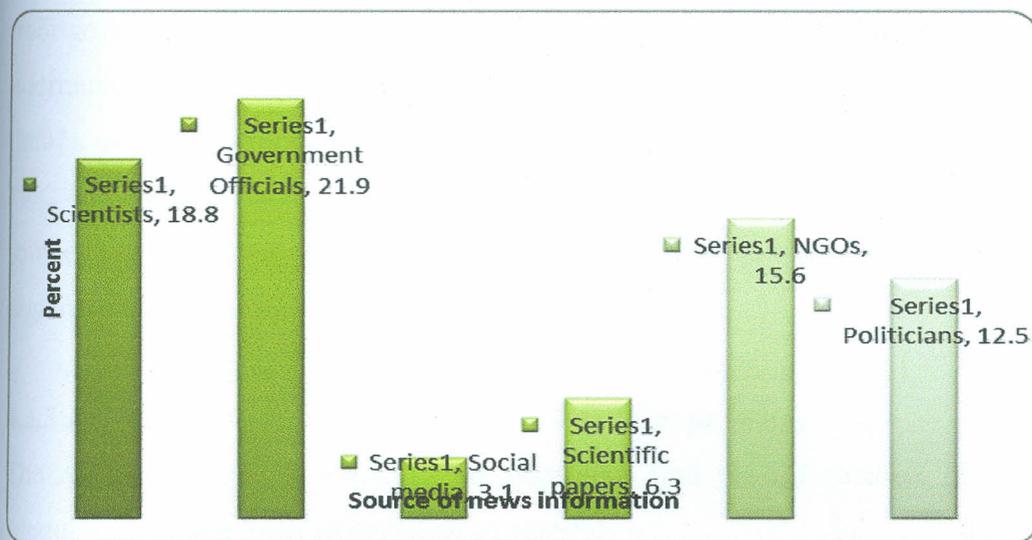


Figure 4.3: Source of News Information for Stories on GMO Food Crops

Source: *Field data (2015)*

The main sources of information for stories on GMO food crops is Government officials (21.9%), Scientists (18.8%), NGOs (15.6%) and politicians (12.5%). The social media and scientific papers are the least sought after materials at 3.1% and 6.3% respectively. This implies that the journalists have challenges getting information from these sources. This would be attributed to complex language and inadequate information. The study noted that the respondents do not consider farmers as an important source of information on GMO food crops, implying that the GMO debate has left out the key players of the technology. An earlier study by Vestal and Briers (2000) had indicated that journalists have faith most in statements about food biotechnology from university and health professionals, followed by the government agencies and farm groups whereas they had less faith in statement from biotech companies and food

companies. Mwale (2011) observes that part of the inability of the media to communicate GMOs is rooted in the fact that the communication falls in the mode of 'debate' rather than in the journalistically more familiar modes of scientific knowledge and information 'dissemination' and 'civic education', especially on GMOs and things biotechnological in general.

This finding corroborates with research by the United Kingdom's Panos Institute (2005) that found out that Kenya is among five developing countries with gaps in the provision of analytical reporting on GM crops. Sources of information for most news articles are press releases mainly from governmental agencies. This would imply that the public who rely on the newspapers for information are not getting comprehensive information on GMO food crops. As Crawley, (2007), observes, a quantitative content analysis of agricultural biotechnology coverage between 1992 and 2004 in the United States also revealed that governmental agencies were the dominant sources of information, followed by the private biotechnology industry and research organizations.

4.3.3 Adequacy of Information on GMO Food Crops Issues

The research sought to know if the journalists find the information from the news sources adequate to enable them write balanced stories.

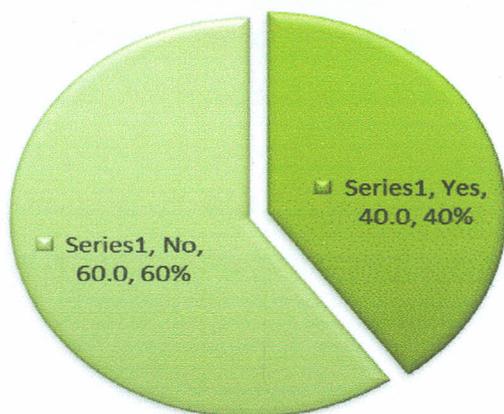


Figure 4.4: If Information on GMO Food Crops is Adequate

Source: Field data (2015)

Majority of the respondents (60%) said the information is adequate whereas 40% said the information is inadequate. The slight difference implies there is need to improve on the availability of information from the sources to enhance a comprehensive and informative coverage. This corresponds with findings that most of their news articles are published on a quarter of a page implying that they don't have to include a lot of details in the articles, due to the limitations of space. The satisfaction could also be due to the finding that most of the journalists rarely write GMOs stories.

The other reason for the journalists being satisfied with the information they rely on to write articles on GMO food crops is as Latham (2014) observes that evaluation methods in public organizations urge researchers to publish in highly specialized scientific journals far more than in magazines for the general public or popularized science magazines, and to participate in scientific conferences rather than in debates with the general public.

In line with the diffusion of innovation theory, when there is a new idea, it is the media that presents information that makes us aware of the existence of the new innovation. However, one of the weaknesses of this theory is that it is linear and source dominated because it sees communication process from the point of view of the elite who has decided to diffuse information or an innovation. This explains why the journalists feel they have adequate information, which they mainly get from the elite in society like policy makers while ignoring ordinary people like the farmers. Indeed as Gaskell and Bauer, (2002) say, most citizens depend on the media to raise their awareness and to provide information and image of things to come. This requires adequate space in the newspapers. Adequate space will save the media from blame for causing the 'difficulties' in which some sectors of the biotechnology movement find themselves; the media misinforms the public and thereby stir up irrational anxieties (Gaskell and Bauer, 2002)

4.3.4 Factors Influencing Frequency of Publication of Stories on GMO Food Crops

The research sought to understand from the journalists why stories on GMO food crops are used on some days and not in others, yet they submit for consideration. This was meant to understand what the editors consider before picking a story on GMO food crops as shown in Table 4.4 below.

Table 4.4: Factors Influencing Frequency of Publication of GMO Food Crops

Factors	Percent
A new twist to a story	18.9
Beaucracy in getting information especially from government sources	12.6
Space limitations for GMO stories	18.9
Perceptions on GMO issues	25.2
Unbalanced stories rejected	12.6
Source of information e.g. NGOs	11.8
Total	100

Source: Field data (2015)

The results indicated that emerging perceptions on what the GMOs food crops portend for the country highly influence usage of the stories compared to other factors. The frequency also depends on the contents of the story with regard to whether it is against; supports or it doesn't favour any side of the technology. Indeed, Gaskell and Bauer, (2006) observes that 'the rise in reaction against a scientific technology appears to coincide with a rise in quantity of media coverage, suggesting that media attention tends to elicit a conservative public bias. As a result, the media will tend to ignore a technology that is widely accepted and focus more on one that attracts debate like the GMO food crops.

Evenson and Santaniello (2004) also observes that a number of journalists focused on risks and expressed stand points opposed to GMOs, sometimes entering into opposition movement themselves. However, coverage of these emerging angles also depends on availability of space as illustrated by 18.9 percent of respondents who believe space limitations affect frequency of publication of GMO stories, alongside a new twist to the information that was also rated the same. However, public controversies will increase the penetration of the mass media and thereby reduce the disparities in the representation of biotechnology in public. Controversies thus raise awareness and educate the public. Therefore, controversies on GMO food crops have led to increased flow of information from the mass media in Kenya making more people aware of the subject (Santaniello, Evenson and Zilberman, 2002).

4.3.5 Adequacy of Space Allocated for GMO Food Crops Stories

The researcher sought to establish if respondents were satisfied with space allocated for GMO food crop stories.

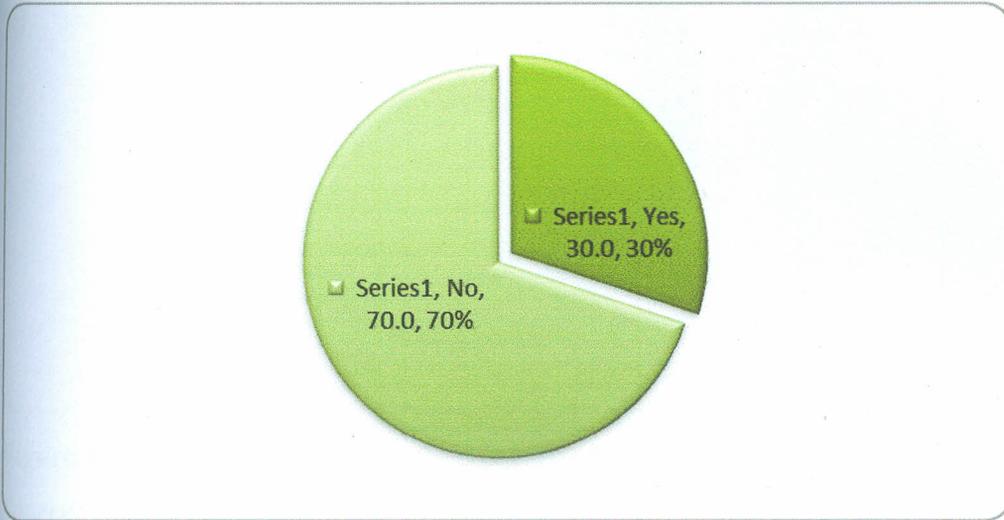


Figure 4.5: Adequacy of Space Allocated for GMO Food Crops

Source: Field data (2015)

A majority 70% of respondents said that space allocated for stories on GMO food crops is not enough compared to 30% who said it is adequate. This implies that the developing stories on GMO food crops are not comprehensively covered due to space limitations. This also implies that there is an opportunity in the journalists publishing more comprehensive articles if they can be assured of space, given that so far, they say information they get from news sources is adequate. Based on the diffusion of Innovation theory, information can be distorted if journalists lack the right platform to ensure they communicate effectively.

4.3.6 Preferred Space for GMO Food Crop Stories

The respondents were asked the space they thought is appropriate for GMO food crop stories. The results are as illustrated below.

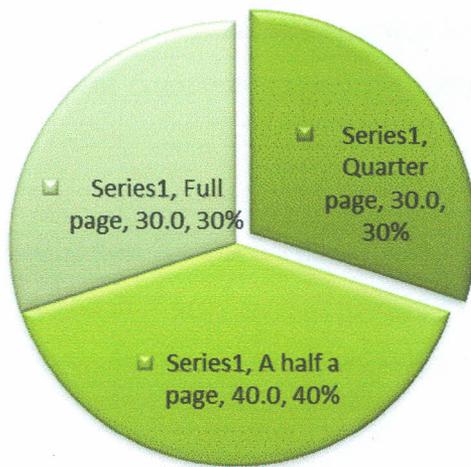


Figure 4.6: Preferred Space for GMO Food Crops Stories

Source: Field data (2015)

Majority of the respondents (40%) feel that a half page would be adequate for stories on GMO issues whereas 30% of the respondents want a quarter page. Another 30% however feel a full page would be adequate. This implies that the space should be increased given that more than a half of the respondents want a half of a page and beyond.

Education Cabinet Secretary. Prof Jacob Kaimenyi as cited by Burrows, (2014) urged the National Biosafety Authority's (NBA).

"I urge the Authority to create more public awareness on biosafety especially at this time when the country is preparing to commercialize GMO products in Kenya. Many people in Kenya do not yet differentiate between a big tomato and a GMO," The Star, 16 January, 2014.

This implies that space for GMO food crop articles is inadequate. The study had indicated that government officials are the most sought after for information on GMO food crops and the call for more awareness coming from a government official is a clear indication that journalists require more space to improve on coverage of GMO food crops.

4.4 Challenges Daily Nation Journalists face when Covering GMO Food Crops

The research sought to establish the challenges that hinder the journalists from getting adequate information to enable them comprehensively cover the subject. They can only be addressed if they are flagged out.

4.4.1 Transport/ Facilitation for coverage of GMO Food Crops

The study sought to establish if provision of transport could be having an impact on the coverage of GMO food crops, given that journalists need to travel to meet various sources for interviews.

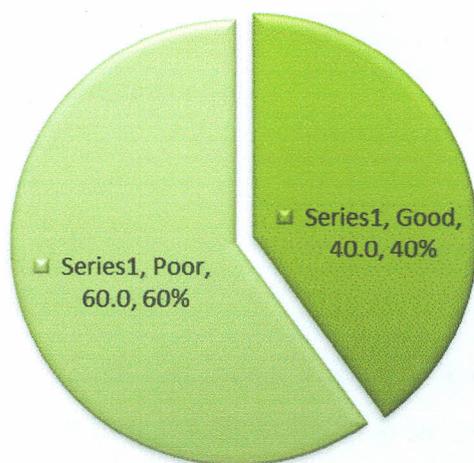


Figure 4.7: Transport/Facilitation for Coverage of GMO Food Crops

Source: Field data (2015)

The findings indicated that majority of the respondents 60% feel that the transport is not adequate whereas 40% said it is enough. The minimal disparity implies that there is need to bridge the gap to improve on the coverage. This could also explain why few journalists have opted to write on this subject that does not benefit from frequent coverage, as others opt for other news genres.

Transport/facilitation is important to the study because based on the diffusion of innovation theory; time is of essence in communication from one individual to another; especially for an idea perceived to be new like the GMO food crops.

4.4.2 Challenges Journalists Face when dealing with News Sources

The study sought to know the setbacks the journalists encounter when seeking information from their sources. This is because, as purveyors of information, journalists can end up misleading the public if they rely on irrelevant sources.

Table 4.5: Challenges Journalists Face

Challenge	Percentage
News sources provide biased information	30.4
Experts give conflicting information	20.5
Fear being quoted.....	10.5
Sources give blogs and journals priority	18.5
Use of technical terms.....	21.1
Total	100

Source: Field data (2015)

From the table, it is evident that majority of the respondents 30.4% feel that news sources are never genuine with what they say about GMO food crops and can provide biased information to suit the point they want to drive home. This is supported by Hofmann (2007) who observes that cultural anchoring (framing) of food biotechnology, through visual communication elicits different responses. Some illustrations like a ripe tomato or maize cob with an injection on it to illustrate a GMO crop in a newspaper article, might affect readers and the journalists' perceptions and sway how they perceive GMO products.

The second challenge is where 21.1% of respondents want the news sources to re-think about the use of technical terms and try to simplify their language. This would enable the journalists communicate the intended message in a simple and clear manner. This concurs with Latham (2014) who observes that the views expressed by scientists tend to be complex while those expressed by the opponents are very loud and clear. Experts contradicting each other on this subject (20.5%) and those who prefer blogs and journals (18.5%) are to blame for different views presented by the journalists that have seemingly affected effective coverage of this subject. This implies that conflict of interest sometimes influences the coverage and this can be attributed to sources like politicians who must endear themselves to voters and scientists whose programmes

could be funded by organization with an interest in the GMO technology. Government officials would be affected by the fear of being quoted as some could be knowledgeable but have no authority, to speak to the media.

This finding read together with revelations that journalists mainly interview government officials for information on GMO food crops, confirms that the biased information generated is to blame for the conflicting messages about GMO food crops. Truly, such unbalanced coverage implies that Kenyans' perceptions toward GMO food crops, is likely to be influenced by the few sources of information journalists rely on to tell their stories, while leaving out other important partners like farmers and consumers of GMO food crops

4.4.3 Actions to be taken to improve GMO food Crops Coverage

The Journalists were asked their views on what should be done to improve on the coverage, through open ended questions that gave them an opportunity to list their suggestions. The answers were analyzed along the thematic areas that saw related responses put together, as shown in the table below:

Table 4.6: How to improve GMO Food Crops' Coverage

Action	Percent
Break down complex terms	11.1
Train Journalists on GMO coverage	22.2
Encourage specialization on GMO issues	8.3
Consider GMO stories for front pages	10.2
Give more space for GMO stories	27.8
Set aside a GMO pullout	10.2
Publish analysis/ opinions by experts	10.2
Total	100

Source: Field data (2015)

The results indicate that giving more space for GMO issues (27.8%) and training journalists on GMO coverage (22.2%) featured more, as what should be done to improve the coverage. This concurs with Kepplinger, Ehmig and Alheim (1991) who pointed out that scientists often doubt the professional competence of journalists because most of the science journalists are well

trained. However, many lack a scientific education. Other suggestions in the study included: Breaking down of complex terms (11.1%), Consider GMO stories for front pages (10.2%), Setting aside a GMO pullout (10.2%) publishing analysis articles by specialists (10.2%) and encouraging specialization on GMO issues (8.3%).

The importance of organizing training for journalists covering GMO issues has been supported by Brossard, Shanahan, and Nesbitt (2007) who observed that cultural anchoring (framing) of food biotechnology, through visual communication elicits different responses. Some illustrations like a ripe tomato or maize cob with an injection on it to illustrate how dangerous a GMO food crop is, have been challenged and media accused of creating wrong perceptions in people's minds.

The misrepresentations just as the theory of diffusion indicates, depends on how the messages are being communicated and the complexity of the intended messages. Without the media adopting a reliable communication approach and access to adequate space in the newspapers, the ideas on GMO food crops may remain new and controversial over the years, putting to doubt the essence of journalists role as communicators.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter presents a summary of findings, conclusions and recommendations for practice and further research on the problem.

5.2 Summary

The purpose of the study was to analyze the coverage of Genetically Modified Organism (GMOs) by the Daily Nation Newspaper journalists. Guided by the main objective of assessing how journalists communicate emerging information about GMO food crops, the study focused on three objectives, which included how placement of GMO food crop stories in the Daily Nation Newspaper affects coverage, analyzing the perception of Nation Media Group Newspapers' journalists on coverage of GMO food crops; and to find out challenges that journalists face when reporting about GMO food crops.

Content analysis was done to assess how placement of GMO food crop stories in the newspaper affects coverage and indicators such as frequency of publication, size of a story on a page, and whether the stories are in support or against the GMO technology, were reviewed. The study found out that the coverage of GMO food crops is not consistent over the months with the highest rating being 38.1 % each for the months of October and November, which had a total of 16 stories out of the total 21 stories published during the four months, under study. This is against the 14.3 % for December that had the second highest number of GMO food crop stories (3), in the newspaper. Two stories representing a paltry 9.5 % were used as briefs on a page in the month of January.

5.2.1 How Placement of GMO Food Crop Stories in the Daily Nation Newspaper affects Coverage

To assess the effect of placement of GMO food crops on coverage, the study sought to find out the pages the articles occupied in the Daily Nation newspapers over the period under study. Whereas GMO food crops are given prominence by occupying a quarter a page on the days used, the placement by page of the stories was poor over the period under study. It was observed that

no single news article on GMO food crops was placed between the front page and page 5. The stories were mainly on page 6-30 with pages 6-10 having only three (14%) stories, 11-15 had four (19%) stories, 16-20 had seven (33%) and 21-30 five (24%). It takes long before GMO food crop stories are used. The back page, which is also considered a prime page, had only two stories (10%) for the entire four months of study. This shows that news stories on GMO food crops were not given prominence in terms of their placement by page. This suggests that the GMO food crops stories lacked the main components of a lead or major story that can end up in the initial pages of the newspaper, which are considered as the most important. This can be linked to editorial policies that offer guidance on what should be considered before stories qualify from the initial pages of a newspaper. This could also be because journalists are never assigned the stories or those done are never used because of the competitive selection process of stories based on their news values. This implies that GMO coverage is not one of the areas that media houses significantly focus on, given that the study focused on the days, when the subject was at its peak. The stories are covered as they unfold as opposed to other newspaper segments where journalists must produce stories on a daily basis.

In relation to size of stories on a page, the study established through the content analysis of newspapers that most GMO food crops stories (81%) are used as lead stories, on a quarter pages, which is the most outstanding section of the Daily Nation newspaper. This was followed by stories used on three quarters of a page (14.3%) and finally those published as briefs, which occupy the smallest size of a page. If a quarter a page constitutes the lead story for the Daily Nation newspaper according to the editorial policies, then it means journalists should strive to get additional space to have more comprehensive stories published, given that from the findings, majority (70%) believe space allocated is not adequate. But, it would remain a tricky balancing act given that most of the space was occupied by advertisements or other smaller stories. Chances of being published on front page are slim because most of the stories used on front page are politics, according to the respondents. However, they can re-angle their stories by seeking comments from politicians.

5.2.2 The perception of the Daily Nation Newspaper Journalists on GMO Food Crops' Coverage.

In relation to journalists' perception on coverage, the study found out that majority of the journalists who participated in this study (40%) preferred a half a page followed by those who were comfortable with a quarter a page (30%). Another 30 % feel a full page is adequate space for comprehensive coverage of GMO food crops stories.

Majority of the respondents (40%) rarely penned stories on GMO food crops whereas 30% write the stories within three years, while 20% write the stories annually. A small percentage (10%) covers this subject on a monthly basis. The perception amongst the journalists that GMO food crops coverage is not a subject worth being covered on a daily or weekly basis is to blame for poor coverage and the controversial nature, the topic has assumed over the years. This explains why introduction of GMO food crops in Kenya is still a controversial subject with many people still in a dilemma over their safety.

Perceptions of journalists in the organization was based on whether they had adequate news sources on GMOs, if they felt space allocated for stories was adequate and their views about how stories are identified for publishing by editors. A sizeable number (40%) said they rarely write stories on GMO issues whereas only 30% said they write stories on GMO food crops once in three months. This implies that more journalists write these stories, only when there is a developing story.

The study also established that the journalists don't consult farmers. None of them selected this important category in the production of GMO food crops as one of the sources of news for GMO stories. Instead, majority (21.9%) said they rely on government officials, followed by scientists (18.8%). Other sources are NGOs (15.6%) and politicians (12.5%). The study indicated the journalists rarely consult scientific papers (6.3%) and social media (3.1%).

Majority (60%) said they receive adequate information from news sources on GMO food crops. 40% of the respondents who said they don't believe the information is enough would be missing information from the other sources that are rarely consulted yet they are equally relevant in processing comprehensive stories.

5.2.3 Challenges Respondents Face when covering GMO Food Crop Issues

The challenges journalists reporting on GMO food crops face were assessed by asking the respondents to list a set of drawbacks that affect their ability to deliver quality stories on this subject. It was observed that news sources provide biased information emerged as a significant challenge (30.4%), followed by use of technical terms (21.1%) whereas the challenge of experts providing conflicting information came third with a score of 20.5%. The least reason that impedes journalists from giving their best was fear of being quoted (10.5) followed by the news sources giving priority to their blogs and journals, (18.5%).

These challenges corroborate with findings in this study, on the main sources of information for journalists given that Government officials, scientists, NGOs and politicians that were identified as the main sources of news in that order, are affected by these setbacks. Government officials can frame their responses to depict the government in good light whereas scientists and NGOs equally, when pushing for the agenda of their donors might be tempted to suppress the truth. The politicians can stand by the electorates even when they don't believe in what they are saying, to remain popular. These groups can also shy away from the media for fear of being misquoted or because they are not authorized to speak with the media. These affects coverage as the journalists' wish to disseminate accurate information is affected. This can be explained as the reason for the indecisive nature of Kenyans over the safety of GMO food crops. Some news sources are also accused of giving priority to blogs and journals. This seemingly refers to the scientists or scholars because publishing particularly in journals as opposed to newspapers, is part of their core duty.

5.3 Conclusion

The following observations can be made from the study aimed at assessing the coverage of GMO food crops in Kenya by the Daily Nation newspapers.

- i. Placement of GMO food crop stories by page is poor. Journalists writing on GMO food crops are not considered for front pages of a newspaper or between page one and five. This can be attributed to editorial policies that have placed emphasis on other genre of articles, when assessing the news worthiness of a story, submitted for publication. Ease of having articles on GMO food crops being published in the front pages up to page five

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will encourage more journalists to think beyond just writing the stories rarely, mainly when they are assigned.

- ii. The perceptions amongst journalists as purveyors of information on GMO food crops are that for their stories to be published, they must mainly have to focus on emerging issues and the news sources that provide the information. They rarely reach out to other sources for instance, the farmers and consumers. This was evident in the analysis that showed that farmers are not amongst the sources of information for the journalists. Farmers have remained an ignored lot as journalists focus on technocrats. This has left a gap in knowledge and prolonged the debate on the safety of GMO food crops. Journalists also believe that they can only work on GMO stories when there is a new twist as opposed to looking at the subject, as a regular undertaking.
- iii. There is no clear policy on how controversial issues like GMOs should be covered to ensure the public is informed to be able to make right choices. Most of the stories on GMO issues don't take a position, thanks to media ethics that require journalists to be impartial and present both sides of a story. However, this has left the public uncertain about the future of GMO food crops. As a result, coverage of GMO food crops by journalists is poor and thus they are not disseminating more information. There is lack of clear guidelines that can encourage consistency in coverage and a comprehensive coverage of the underlying issues to promote an informed society.
- iv. Journalists are dissuaded from focusing on GMO issues due to news sources being insensitive to their needs. News sources being biased in provision of information, use of technical terms that can communicate the intended message in a simple and clear manner and provision of conflicting information are some of the challenges that keep off, journalists thus hindering free flow of information, on this subject.

5.4 Recommendations

Based on the conclusions arrived at, the following recommendations suffice:

There is need for media management to redefine the in-house policies to strengthen the role of the media in focusing on matters of national interest that require comprehensive coverage to their logical end. There is need to give more space for GMO food crop articles in the newspapers, to encourage more journalists into this area of reporting.

GMO still remains a controversial issues and unless deliberate measures are made by the media to fill the vacuum through accurate and enhanced coverage of the topic, policy makers, technology developers, farmers and consumers will continue being uncertain about the way forward. Media houses must create space and encourage specialization in science, health, environmental and business reporting, as this is where coverage of GMO issues falls. The media managers ought also to come up with clear policies on coverage of topics that are controversial like the GMO technology and require consistent coverage to promote an educated and informed public.

There is need for news sources particularly government officials and scientists to rethink about their communications policies when dealing with the media to enhance accurate and timely reporting. More experts should be allowed to freely divert information meant for the public good to the media. This also calls for the government to respect the right to public information, which is a constitutional right. Regular forums aimed at forging a better working environment should be encouraged between journalists and sources of information on GMO food crops. The news sources particularly scientists must be encouraged to use simple and clear language to explain issues as opposed to technical terms This would encourage informed coverage of GMO food crops issues and reduce cases where journalists might be tempted to speculate on issues.

Journalists need training sessions to hone their skills further. Enhancing the capacity of journalists to critically analyze scientific and technical issues will enable them write well-researched, objective and comprehensive articles on GMO food crops that can elicit informed responses. The journalists will be able to interpret complex information from the news sources and communicate in a simple and clear language without distorting the intended message. Through such refresher courses and trainings, challenges of sources providing biased information due to the need to promote the ideals of their employers or donors can be identified and challenged through further probing as opposed to presenting the same biased angles.

Media Ethics needs to be re-emphasized amongst journalists following revelations that all the angles of a story are not looked at, to promote fair and balanced coverage. This follows revelations that farmers who constitute an important constituency, in the GMO debate were

never cited as sources of information by the journalists. They have remained an ignored lot as journalists focus on technocrats. Journalists should move away from over relying on policy makers and scientists and tell their stories also from the victims' point of view.

Placement of stories on pages should be reviewed to encourage journalists who write on GMO food crops to produce more. The current trend where stories on GMO food crops are relegated to inside pages is to blame for little attention towards this subject, irrespective of it being a controversial and thus not widely understood issue.

Journalists should diversify their sources to capture varied views about the GMO food crop issues to effectively communicate their messages. They must ensure the views of farmers and consumers of GMO food crops are also captured to enrich the articles that are published, for public consumption.

5.5 Suggestions for Further Research

This study does not cover all the areas surrounding GMO food crops. It however creates a platform from which future researchers can base their studies on. Future researchers can consider monitoring online response rates for GMO food crops stories covered in newspapers or the electronic media. Scholars can also analyze the influence of editors on journalists' area of specialization in a newsroom and how this affects coverage of GMO food crop stories. It would also be better to study whether locations of a story on a newspaper page affects readership of GMO food crops stories can also be studied, to understand if some pages are indeed considered, important than others.

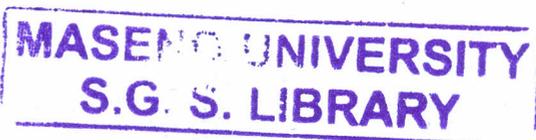
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