

"The Management of Non-Bio Degradable Solid Waste: Challenges and Prospects in the Digital Age"

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Abstract:- The difficulty that arises in connection with the management of non-biodegradable solid waste including plastic bottles in Kinshasa is that of the lack of effective and efficient communication on the awareness of the population by green associations, to the governance of a beneficial to manage non-biodegradable solid waste including plastic bottles that excessively pollute the City province of Kinshasa. The magnitude of the modern ecological crisis has led to the formation of a universal awareness of the fragility of planet earth.

This awareness of the ecological disaster, lurking over the inhabitants of planet Earth, goes hand in hand with the recognition of the bound fate of all humanity. It therefore contributes to the development of an awareness of cross-border eco-responsibility.

Green associations should be imbued with the use of digital technology for the management of non-biodegradable solid waste, including plastic. Green organisations (environmental NGOs, environmental structures, etc.) should put digital tools as practices in order to better convey their messages. This is why green associations should use digital technology to persuade the population of Kinshasa.

Keywords:- Digital, non-biodegradable solid waste management.

I. INTRODUCTION

Digital communication is inevitable in our everyday lives. Information and Communication Technologies have been very remarkable in recent years by the acceleration of their pace and the scale of their generation. This situation, combined with the globalization and globalization of economies, creates a turbulent economic environment around companies¹.

However, communication is impacted by the evolution of digital technology. We talk more about traditional (unidirectional) communication where companies place their advertising spots on television channels, on paper media and whose effectiveness is calculated only according to the turnover achieved. We have entered a whole new dimension, that of digital communication that allows companies to follow their communication campaigns in real time and

gives them the opportunity to perform the maneuvers if necessary².

Digital should intervene in the management of non-biodegradable solid waste, including plastic bottles, so that green organizations can pass on messages in an instant and efficient way.

II. DIGITAL

Under this point, it is a question of showing the societal revolution operated by the digital world and which is at the basis of the questioning of the management of non-biodegradable solid waste in the digital age. The numerical concept³ comes from the Latin numerus and refers to the encoding of all types of content (text, image, sound) by means of encrypted characters. Digital includes infrastructures (servers, networks, search engines, browsers), data (database, flows, processing), terminals (computers, tablets, mobile phones, etc.).

As a reminder, let us remember that from the 2000s, with the switch of audiovisual media from analog recording to digital code of sounds and images. Beyond the online presence on the most traditional media, digital is interpreted by the appearance of native media of the web. There has been an abundance of information and entertainment provision; accessible at any time and on different media.

Indeed, many interdisciplinary researches focus on digital transformations and the advent of a networked society. This is a technological revolution but also a societal one, because digital technology has spread to all spheres of activity and is a source of new practices. It has promoted interpersonal communication, creation, creation of online collectives, peer-to-peer exchanges, public expression (comments, debates, forum, etc.).

The user has become himself a producer of content (music, photos, videos) hosted on sharing platforms (YouTube, Flickr, etc.).

The formats of editorial production have been renewed; online video games and humorous short videos are acclaimed. Consumer networks, such as Facebook, are very successful and Internet users maintain links with their loved

¹Fidèle.nwamen.cairn.info. *Impact of information and communication technologies on the commercial performance of companies, the journal of management sciences*, 2006, p111/121 available, on : <https://www.cairn.info/revue-des-sciences-de-gestion-2006-2-page-111.htm>, accessed on 13/05/2022

² AMROUCHI, Kaci. *The impact of digital communication on customer loyalty* [online] <https://se25646a70f727562.jimcontent.com/download/version/1528...> · PDF file, retrieved 2022-05-13.

³ Jean-Baptiste LEGAVRE and Rémy RIEFEL (sub-direction), *The 100 words of Information and Communication Sciences*, Paris, PUF, 2017, p.76-78.

ones, expand their circles of sociability, share cultural goods and build a digital identity.

This is the recent societal existence for the so-called digital third generation, that of an uninterrupted connection between objects and users thanks to the exponential capacities of networks.

On this, the emerging green associations in the Democratic Republic of Congo in general, should be impregnated with the use of digital technology for the management of non-biodegradable solid waste including plastic. How the organizations vertes (Environmental NGOs, Ministry of Environment and Sustainable Development, etc.) should put into practice digital tools to better sensitize the population of Kinshasa on the management of non-biodegradable solid waste including plastic? Knowing our green organizations or associations, we can only answer that the use of digital technology is not sufficiently exploited by green organizations or associations to raise awareness among the population of Kinshasa in the management of non-biodegradable solid waste including plastic. Because they should already adapt to this new media landscape to reinforce messages about the management of non-biodegradable solid waste.

III. THE MANAGEMENT OF NON-BIODEGRADABLE SOLID WASTE INCLUDING PLASTIC BOTTLES IN THE DIGITAL AGE

New digital tools are helping to redefine the way we manage the environment in general, in particular non-biodegradable solid waste, while remaining alert 24 hours a day to the various persuasive messages emanating from actors who preserve the environment.

The Congolese authorities should put in place digital strategies related to the management of non-biodegradable solid waste, for the awareness of the Congolese population to the management of non-biodegradable solid waste, and finally make digital monitoring to disseminate information allowing the population to be persuaded by environmental messages, and that it shares information between them through the blog, website, digital social networks.

The government should focus on the arrangement of access to new communication tools to the population, finally to appropriate them and use local languages on the Web to persuade the population to manage non-biodegradable solid waste.

Given that in Africa, ICTs are, on the whole, monopolized and sanctioned by rulers who decide everything society needs to know or believe, who show citizens the way forward, instead of "focusing people's attention on the need for change, animating their aspirations and being the way in which people discuss politics and strategies leading to constrictive and intelligent participation".⁴ In this sense, public and private actors

⁴PIYASOMA, "Methods and techniques in the field of rural communication", in Adult Education and development, (October 1986) n°27, p.121.

should take the opportunity to convey messages related to the management of non-biodegradable solid waste.

For the magnitude of the modern ecological crisis has led to the formation of a universal awareness of the fragility of planet earth. This awareness of the ecological disaster, lurking the world today, and of the recognition of the bound fate of all humanity. It therefore contributes to the development of an awareness of cross-border eco-responsibility. Such an awareness of responsibility not only decies and breaks the reflexes of chauvinist recoquillement, but also leads to the emergence of a transnational solidarity that is exercised in particular in the collaboration of the elite as well to have it, power as knowledge.⁵

On the other hand, in developing countries, our societies do not have a good policy to environmental standards, as regards their modes of production, consumption and rejection.⁶

We made an observation on the plastic material that creates daily disturbances in its management in the city of Kinshasa following the inadequacy of a good policy of environmental awareness by green organizations and the Congolese State. Since the Population of Baden is not sufficiently informed and made aware of environmental protection, it simply throws the waste at any location⁷.

In order to answer the questions of the day and to put digital technology as an effective tool at the service of the management of non-biodegradable solid waste including plastic, in this reflection, we indicate what environmental communication must be in the digital age to green associations in Kinshasa. To do this, we propose a new strategy more adapted to the digital age; which is essentially based on the new principles of communication, namely 360-degree communication, *crowdsourcing* and finally an awareness campaign plan for the digital age.

Indeed, at this stage, we explain these two principles of communication on which environmental communication must be based today in order to raise awareness among the population of Kinshasa.

A. 360° communication

Since green associations, in its mission, aims at sustainable development, they are called to adapt its communication to the new social life, which has become very virtual, they must adapt their way of communicating to the men of its time.

The principle of 360° (degree) communication, as explained by Jean-Erick Pelet and Jérémy Lucas-Boursier, consists in taking into account all the bridges of contact with

⁵François, RAMADE, *Elements of ecology*, Paris, ed. DUNOD, 2003, p. 123.

⁶Jules, Kassay, Ngur Icon, 2010, "The proliferation of plastic waste in the city of Kinshasa. What is the view of the City Hall? ", In *Mouvements et Enjeux Sociales*, n° 59, March-April, p.46-48.

⁷Ditto.

the user⁸. For ServanneBarre and Anne-Marie Gayrard-Carrera, it is an integrated multichannel communication (cross media) consisting in putting at the center of a communication device multiplying the points of contact.

As a result, many channels will be activated to facilitate the dissemination of the awareness message through campaigns on non-biodegradable solid waste including plastic bottles. Faced with our current social environment, which has become more and more multi-screen and multitasking, communicating today must integrate the most commonly used Web tools.

a) Basic principle: 360° communication

Above all, it should be stressed that the principle that must guide this strategy can only be that of 360-degree communication. By this, as Jean-ÉricPelet and Jérémy Lucas-Boursier explain, this principle consists in appropriating and using a form of communication that takes into⁹ consideration the exchange with the user. This is the principle of multichannel and multimedia. Green associations should put into practice the principle of *Crowdsourcing*, because they are not at all visible on the net.

Concerning multimedia and multimedia, green associations or organizations will be able to adopt:

Upstream they should use digital social networks: have a whatsapp group, a Facebook group, a blog, almost visible in digital social networks with the aim of raising awareness and exchanging with the public on the issue of the environment. Downstream, they should use the following tools to convey the awareness message: posters, signs, flyers, leaflets, leaflets, etc.

b) The crowd sourcing principle

This founding principle puts the Internet user at the heart of the device, to make it a user centric. All this, with essentially free services, or even improved by a community of Internet users. The notion of user-generated content. It was also consecrated in December 2006 by Tim Magazine, which posted on the cover "the man of the year, it's you!". This magazine simply reminds us of the plebiscite that the social web made in favor of the user at the beginning of the year 2000.

In the same vein, the designers of 2.0 services for green associations, are starting to offer Internet users to create their personalized platform on the exchange of environmental information, especially on the management of non-biodegradable solid waste. Such as YouTube and Facebook that allow developers to create their own applications. The idea is no longer to create sites for users, but for them to create them as they want and when they want to

exchange useful environmental information. Today, follows its stakes that these green associations should take advantage of it to raise awareness about the management of non-biodegradable solid waste including plastic.

Green associations must constitute texts, sounds, still or animated images and video (multimedia) to raise awareness among the population of Kinshasa about environmental management, especially non-biodegradable solid waste including plastic. Managing on a daily basis is a necessity for entrepreneurs who are always in demand. To manage their time, green associations should use planning, which is an essential tool, because it allows you to manage your time in the short, medium and long term, but also to keep a history of past events. It must be associated with a task manager that completes the schedule and be deferred and postponed, while using the following tools;

- **Wunderlist:**

A task manager like Wunderlist qui allows you to list the tasks that can be used even through a Smartphone.

- **Google Agenda**

Google Calendar should be an incontournable free tool within green associations, which gives the possibility to manage several agendas to exchange environmental information on the management of non-biodegradable solid waste including plastic bottles, for example, separate one's professional agenda and personal agenda. An agenda on the shared or public environmental activity program (visible on the internet).

- **Tips and tricks**

Managing your time is about getting organized, making choices, and avoiding constantly looking at emails and text messages during work hours.

- **Managing challenges and invoices**

Accounting obligations concern all entrepreneurs even if there are nuances depending on the type of business; self-enterprise, liberal profession.

- **A spreadsheet**

Generally, when you start your business, the goal is to find a simple and free solution. Using a spreadsheet to create invoices. A factor tracking table.

- **Enterprise resource planning system**

Here green associations will have to use an application to manage any activity, they can use a Dolibar application, which is an open source solution based on a single web interface and database for all environmental information.

- **An online service**

Depending on your status, its green associations should use suitable tools, for example, online services such as my E.fr allowst.

⁸Jean-Eric Pellets and Jérémy Lucas-Boursier, *Digital communication checklist*, Malakoff, DUNOD, 2017, p.1

⁹Ditto

In short, both structures should use:

- **Regarding the Intranet:** Green associations will be able to use any online network inside (social networks, etc.) in order to better exchange with their staff in real time on the various topics related to the environment.
- **On extranet :** They must use the different applications and websites to better exchange and stay online 24 hours a day with their external audience to communicate well and identify some concerns of the external public on environmental management.

B. Awareness Campaign Plan

Our campaign plan to raise awareness among the Kinshasa public includes the following:

- a) Objective of knowledge:
Increase by 20% the rate of people who know the benefits of environmental hygiene and the management of non-biodegradable solid waste including plastic by the end of 2022.
- b) Attitude objective:
Increase by 20% the rate of people who perceive the benefits of a healthy environment by the end of 2022.
- c) Behavioral objective:
Increase the rate of people practicing environmental hygiene by 20% by the end of 2022.

- **Audience segmentation**

As communication objectives are well defined in measurable terms, it is now a question of identifying communication targets and making their analysis.

- **Core target:** young people

The profile of our preferred target is socio-demographic. This communication will be addressed to young girls and boys whose age varies between 13 and 35 years. The objective of this choice is to create a new generation of eco-citizens. Also, just like other categories of people, young people are not spared by typhoid and malaria, which are breaking records in almost all medical diagnoses in Kinshasa. This is why we must make them aware of this permanent danger that awaits them.

From a psychographic point of view, young people are naturally attracted to beauty in general. This is one of the reasons why they envy other cities around the world. Hence the interest in arousing this latent need here at home.

- **Secondary target:** it is made up of the people who need to push through the desired change.

- **The family :** this is the foundation par excellence of education. It remains the first instance of socialization.
- **School:** it is a better channel of communication. Because, at school, young people have an attentive ear to what their teachers say.
- **Clinical settings and medical staff:** they are advisors par excellence. Through statistics on the rate of people suffering from diseases caused by unsanitary conditions in our environment, they can significantly mobilize young people to defend this cause.
- **The Church:** through the formation groups, their teachings can make young people act effectively and positively on environmental hygiene.
- **Opinion leaders:** musicians, comedians and sportsmen are sometimes a category that is most listened to. Through their songs, theatres and expertise, they can disproportionately influence young people's appetites for sanitation.
- **NGOs:** through their charities, competitions and service delivery, they can reach the sensitivities of young people for this cause.
- **The State:** By allocating the necessary resources for sanitation, the State can contribute significantly to the creation of a climate conducive to the desired change.

- **Creating messages**

The effort made here consists in setting up an open discourse, likely to touch the soul of the target audiences. It is a discourse that must remain in the collective imagination and that must make people act at the same time.

- **Slogan :**

"Without my contribution to stop unsanitary conditions, waste is not an evil but a wealth!"

To achieve its goals, change must be felt at all levels of life. That is why this slogan must be used in an exploded vision. In its application, each entity will have to replace the name "Kinshasa" by its own because, it is the sum of these results that will make Kinshasa chic.

- **Creative strategy**

Message component	Conceptualisation
Advertising axis	Yesterday Kinshasa was recognized as "Kin-la-belle". But why not today?
Concept of evocation	Committing myself to properly maintain my space and throw my garbage only in a suitable garbage can is to make this dream possible for plastic bottles.
Promises	To overcome insalubrity is to see in Kinshasa a city similar to that of your dreams.
Promise support	At any time and everywhere, an effective sanitation and hygiene network will accompany you to eliminate your non-biodegradable solid waste including plastic bottles.
Conclusion	Voting for "Kin-la-belle" means avoiding unsanitary conditions wherever you are.
Tone of communication	Testimonial

Table 1: Creative strategy

- **Communication channels**

Action to change also means selecting the compatible means by which the transmission or broadcasting of messages from the sender to the receiver. This choice is made according to the following few criteria:

- Concordance with the target (attitude, cognition, etc.),
- The credibility of the channel,
- Geographical coverage,
- The cost.

For the present case, the channels chosen are below

- Institutional channels: education systems, academics, NGOs, clinical settings and the hygiene service.
- Media channels: mass media (radio, TV, billboard press),
- Digital communication, digital social networks, website, blog, email etc.
- Socio-cultural channels: opinion leaders (musicians, actors, sportsmen and religious leaders).

This leads us to propose a **media plan** in the following table:

- **Media**

Means of communication	Actions	Period	Slot
TV	Swinging of commercials	The entire campaign period	6h15, 12h15, 18h45, 20h30
Radio	Swinging of commercials	The entire campaign period	6h15, 12h15, 18h45, 20h30
Display	Installation of billboards in the city.	The entire campaign period.	- + -
360-degree or digital communication,	Digital networks, internet, blog, email website.	The entire campaign period	24 hours a day.

Table 2: Media

- **Excluding the media**

- Installation of banners,
- Constitution of eco-citizen clubs,
- Educational talks,
- Lecture tour,
- Sports events,
- Marathons,

- Competitions,
- Public broadcasts,
- Sketch and theatres,
- Film screenings and debates,
- T-shirts,
- Caps
- leaflets etc.

- **Timing and operational action plan**

- **Timing**

Their actions can take place over a maturity of 12 months, divided into four (4) quarters. The first quarters are essentially preparatory and the last two are those of the launch of the campaign itself. In other dull ones, this campaign runs from January 2021 to the end of December 2022 and the official launch of the campaign.

The month of June prefigures the great holidays. The activities of this campaign will keep the young people busy during this moment of relaxation and will continue until December, such a festive season, to provide them with a healthy and beautiful setting to celebrate the New Year.

- **Monitoring and evaluation**

The follow-up will consist of regular, periodic monitoring and analysis of the evolution of activities as planned. The methods put in place to monitor and evaluate the effectiveness of the campaign will be:

- Media monitoring,
 - Control of campaign strategies,
 - Field visits,
 - Collection of statistical data (population survey), etc.

The evaluation will focus on a few indicators by comparing the initial situation and the arrival situation. Well beyond that, the following questions will have to be answered:

- Has the message reached the intended audience,
 - Has the message been disseminated through the intended modes,
 - Has the release schedule been respected,
 - Did the message have the desired effect,
 - Did the message meet the needs according to the target audience,
 - Does the public believe in the message?

IV. CONCLUSION

The management of non-biodegradable solid waste, of which plastic is becoming essential in the digital age. Green associations are called upon to use all possible points of contact in order to reach targets that have Internet connection anywhere and at any time to convey messages relating to the management of non-biodegradable solid waste including plastic. Because the Kinois public is thus interactive, virtual and morbinaut, they should now source the content of its environmental messages from the latter.

This content must be the precise messages example *the waste is not an evil, but a richness*, the videos, sound elements and images relating to the management of non-biodegradable solid waste including plastic having directly related to ecology. Use digital especially 360° communication such as Facebook, Whatsapp, Twitter, blog, websites, and highlight a global communication plan with specific environmental objectives, determine target groups, design effective messages, multi-media or a media plan, and operational action plan.

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