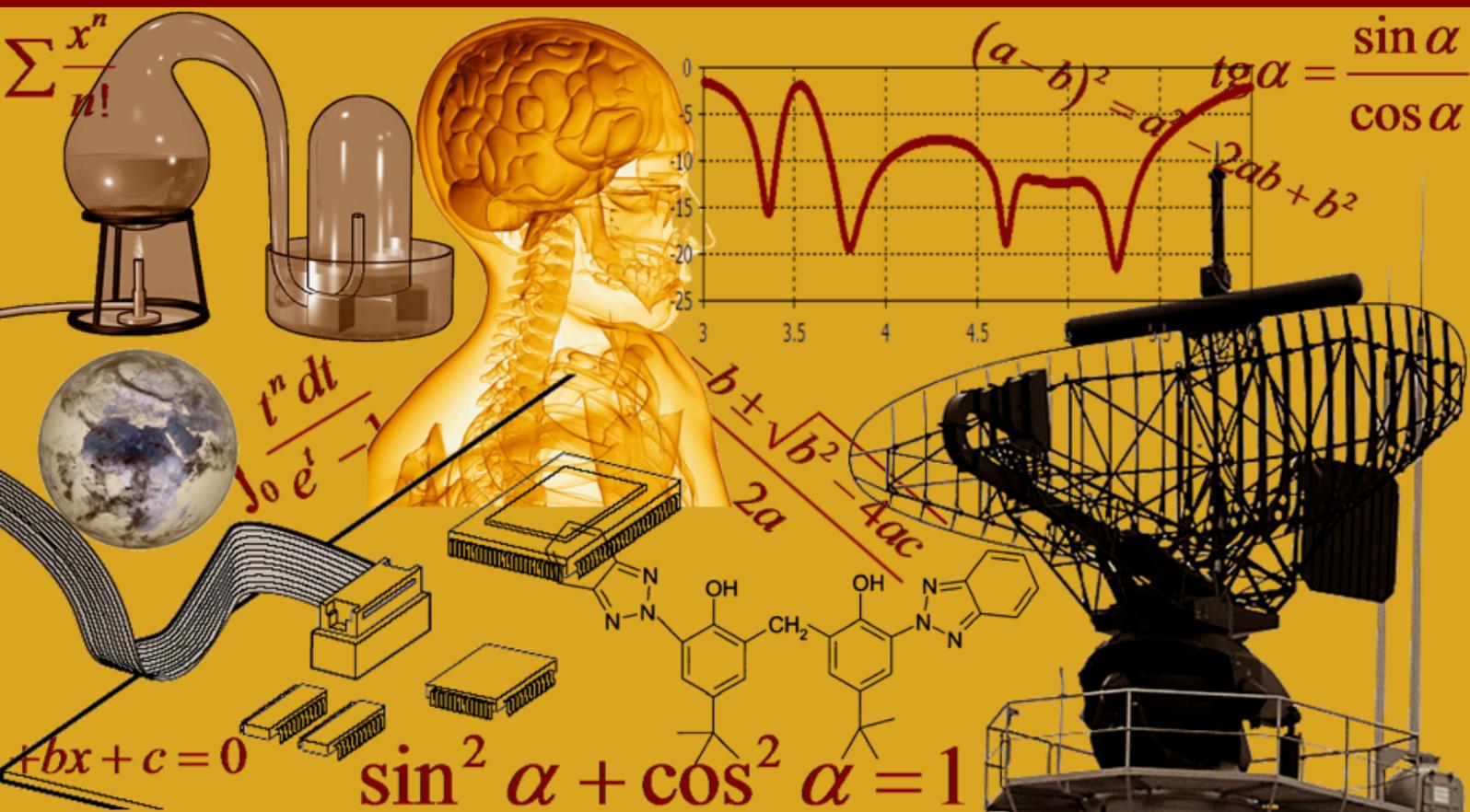


INTERNATIONAL JOURNAL OF INNOVATION AND SCIENTIFIC RESEARCH

Vol. 28 N. 1 December 2016



International Peer Reviewed Monthly Journal



International Journal of Innovation and Scientific Research

International Journal of Innovation and Scientific Research (ISSN: 2351-8014) is an open access, specialized, peer-reviewed, and interdisciplinary journal that focuses on research, development and application within the fields of innovation, engineering, science and technology. Published four times per year in English, French, Spanish and Arabic, it tries to give its contribution for enhancement of research studies.

All research articles, review articles, short communications and technical notes are sent for blind peer review, with a very fast and without delay review procedure (within approximately two weeks of submission) thanks to the joint efforts of Editorial Board and Advisory Board. The acceptance rate of the journal is 75%.

Contributions must be original, not previously or simultaneously published elsewhere. Accepted papers are available freely with online full-text content upon receiving the final versions, and will be indexed at major academic databases.

Table of Contents

Promotion and Practice of Environmental Knowledge: The Experience of National Science and Technology Museum on Planning Special Exhibitions for "Taiwan Sustainable Campus"	1-8
L'EMERGENCE DE LA DEMOCRATIE DANS LA PROVINCE DU NORD-KIVU EN REPUBLIQUE DEMOCRATIQUE DU CONGO	9-14
L'ORGANISATION DES ELECTIONS PLURALISTES, LIBRES, DEMOCRATIQUES ET TRANSPARENTES DE 2006 EN TERRITOIRE DE WALIKALE	15-23
La valorisation des produits du terroir: enjeux et perspectives	24-29
La dépression de la pande et le gisement de Gypse de Kapiri	30-37
The Significance and Values of Indigenous Rituals among the Oromo People: The Case of Uke Ritual	38-50
Service quality, Customer Satisfaction and Loyalty of Commercial Banks in Ethiopia	51-65
Pragmatic Analysis of Some Expressions of Politeness in Kihavu (D52/J53)	66-75
FPGA Implementation of MQ Coder in JPEG 2000 Standard - A Review	76-83
BACTERIAL BIODIVERSITY OF THE DRINKING WATER DISTRIBUTION NETWORKS OF REGIDESO KISANGANI (RD CONGO)	84-86

Promotion and Practice of Environmental Knowledge: The Experience of National Science and Technology Museum on Planning Special Exhibitions for "Taiwan Sustainable Campus"

Tzu-Hsiang Ger, Mei-Tsen Chen, and Chi-Shu Tseng

National Science and Technology Museum,
720, Jiouru 1st Road, Kaohsiung 807, R.O.C., Taiwan

Copyright © 2016 ISSR Journals. This is an open access article distributed under the ***Creative Commons Attribution License***, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: To present the essence of sustainable development education of Taiwan in museum exhibits, National Science and Technology Museum (NSTM) has been working to the best of our ability and creativity over the years. As part of government plans of promoting sustainability concept, two dedicated exhibition were curated by NSTM with different approaches. In the Achievement Exhibition of 2004, campus settings such as classrooms, campus stores, and educational gardens were designed in the exhibition hall to introduce concepts and ideas of recycling, soil permeability and water retaining capability. Unlike the precedent 2004 exhibition comprising fragments of knowledge, the "Planting Trees vs. Educating the Young: Taiwan Sustainable Campus Achievements" exhibition of 2009, systematically categorized exhibits into different sections of "Low Carbon Lifestyle and Renewable Energy Commercialization", "Healthful and Efficient Learning Environment", "Sustainable Ecosystems", and "Sustainable Campus Education", providing a more complete and systematic presentation of in a museum setting and corresponding more to the expectation of the academic circle and professionals. A survey of the visitors was also conducted through questionnaire during the 2009 exhibition to study audiences' familiarity with the topics as well as efficacy of the exhibition. Results showed that visitors did benefit from the exhibition in understanding more of the concepts of "Sustainable Campus", while the concept of sustainable energy, to certain extent, also inspired the introduction of NSTM.

KEYWORDS: Sustainable Campus Education, environmental knowledge, exhibition, green museum.

1 FOREWORD

In the aftermath of the 921 earthquake, Taiwan took a completely revolutionary approach to the problem of rebuilding. Sustainable campus promotion uses sustainable business concepts in the building of green ecological campuses. The concepts are then extended outward from the campuses to promote the full recovery of industry and infrastructure in communities all around Taiwan and create low polluting living environment to make progress towards sustainable development.

Characterized as an education reform taking local circumstantial measures and giving equal consideration to both software and hardware, Taiwan Sustainable Campus Program aims at creating a progressive, safe, sanitary, healthful and human-based learning environment. Comprising various related projects, implementation of the program has transformed diverse technologies into systemized environmental knowledge. For example, in the category of "Resources and Energy Recycling," the knowledge of water recycling that covers rainwater harvesting and water purification is presented in schools.

During the promotion process for the sustainable campus transformation program, National Science and Technology Museum not only played an important role with respect to the recording the development process, different exhibition techniques were adopted to introduce the multi-year achievements of the sustainable campus program and systemized environmental knowledge to the general public.

2 DOCUMENTATION ANALYSIS

2.1 SUSTAINABLE SCHOOL

There are different names for school sustainable development around the world such as sustainable school, eco-school, green school, health school and high performance school. The promotion plans for sustainable campus environment issues at these schools differ based upon the development focus of each country [1].

Derived from the trend of thought of Sustainable Development [2], the concept of Sustainable Campus has been defined by the academic circle as in four aspects: school premise planning and campus management; school environment policies (including school environment audit and survey); teaching and learning based on campus resources; campus life.

The elements and targets at sustainable campus programs in Taiwan mainly focus on the achievement and maintenance of sustainable development campus systems with regard to the school's own campus ecological environment, building space, environmental education, education & environmental management and eco-friendly living practices [3].

2.2 PROGRESS OF TAIWAN SUSTAINABLE CAMPUS DEVELOPMENT

- Green school partner webpage. The green school concept was introduced to Taiwan in 1998. Educators set up a web sharing platform so schools that emphasize environmental education can freely and spontaneously share their experiences over the Internet.
- New campus movement. The 921 Earthquake that struck in 1999 caused serious damage to some school buildings and environmental destruction. From infrastructure requirements to post-disaster awakening, campus rebuilding is not just about making school buildings more sturdy and secure, environmental reconstruction sustainability concepts were also included.
- Green school promotion. Green schools with environmental awareness and practical capabilities create sustainable development learning spaces by employing green building and eco-school environmental reconstruction techniques so that school environments can uphold sustainability, ecology, environmental protection and health principles.
- Sustainable campus program. Develop wide-ranging sustainable campus program through adaption to local conditions, subsidies that encompass both hardware and software and receiving support from green universities and vocational techniques [4]. In view of escalating global warming, "carbon balance" and "wholesome learning" became the centerpiece of the development project.

2.3 MUSEUM EXHIBITS

The shared mission of museums and schools is education. Some of the special characteristics of museum education are: able to be learned by all people, no age or learning time limitations, no course standard, and diverse paths of knowledge transmission. Along with world's growing concern on environmental issues, Sustainable Development has become a shared vision of humanity receiving much attention in all aspects of our society, economies, and environment [5].

Covering awareness, knowledge, attitude, skills, evaluation capacity and participation, the various goals of environmental education, not only reflect sensitivity and sense of responsibility from both individual and group perspectives but address environmental issues with appropriate actions [6]. Museum exhibits can display contents and achievements in a effective way that give more people a chance to understand the importance of environment education and sustainable development [7].

It takes proper processing for information to become knowledge. A museum shall disseminate knowledge with goals in a systematic and well-planned manner [8]. The public listens to museums, and believes what they hear [9]. Museum exhibits use a variety of media to create a context to encourage learning and enable visitors to understand the information transmission method. Therefore, in the museum exhibition area, students learn through real multi-sensory experiences that further enhances the study effects [10].

3 CASE STUDY ON THE SUSTAINABLE CAMPUS EXHIBITION

To present the essence of sustainable development education of Taiwan in museum exhibits, National Science and Technology Museum (NSTM) has been working to the best of our ability and creativity over the years. As part of government plans of promoting sustainability concept, two dedicated exhibition were curated by NSTM with different approaches.

3.1 THE SUSTAINABLE CAMPUS EXHIBITION IN 2004

The National Science and Technology Museum made use of campus space layouts (such as the classrooms, canteen, auditorium and teaching farm), single interactive display units (i.e. recycling classroom desks and chairs to make floor boards and percussion instruments) and presentation activities (i.e. wave power generation and soil water permeability) at the sustainable campus exhibition held in 2004 in order to attract the general public attention to the subject to sustainable campus development.

A variety of exhibits were presented including resource recycling, healthful indoor environment, water resources and energy renewal, and defoliation and compost. A "green" xylophone made from recycled classroom desks and chairs was exhibited in an interactive manner, allowing visitors to play on it and have firsthand experience in material reuse. The importance of water conservation was highlighted by the exhibits of wave power generation, soil permeability and water retaining capability.



Fig. 1.A xylophone made from recycled classroom desks and chairs



Fig. 2. Exhibit of soil permeability and water retaining capability

Based on the concept of sustainable development, a number of display units were kept for reuse in later events [11]. For example, after being re-displayed in other exhibitions in the theme of environment protection, the "green" xylophone was presented to a school, while the display units for rainfall harvesting and reuse were re-displayed in other exhibitions organized by N.S.T.M.

Although the design and planning of the exhibition successfully displayed all key concepts of "sustainability" and awaked visitors' awareness that the improvement of campus environment is feasible, the overall knowledge of material cycles and energy flows in ecosystems was not covered.

3.2 TAIWAN SUSTAINABLE CAMPUS ACHIEVEMENT EXHIBITION IN 2009

At the 2009 Taiwan Sustainable Campus Achievement Exhibition, highlights and information from various examples of adaption to local conditions, transformation results and implementation schedules were converted into exhibit units. The presentation of systematic knowledge was the focus of this exhibit. In other words, the interlocking relationship between natural environment and ecological systems could not be seen as a whole if the exhibit was only displayed in parts. For example, water stability monitoring for school water environment creation, water use and conservation arrangements, rainwater and water recycling and reuse and the eco-technology used with natural filtering cycle systems for drain water cannot be represented by a simple water purification pond. This exhibition drew an excellent response and toured cities such as Taipei and Chiayi. Over 200,000 visitors attended.

The "Planting Trees vs. Educating the Young: Taiwan Sustainable Campus Achievements" exhibition of 2009, systematically categorized exhibits into different sections of "Low Carbon Lifestyle and Renewable Energy Commercialization", "Healthful and Efficient Learning Environment," "Sustainable Ecosystems," and "Sustainable Campus Education," providing a more complete and systematic presentation of environment conservation concepts and knowledge in a museum setting and corresponding more to the expectation of the academic circle and professionals.



Fig. 3. The natural water purification systems

The natural water purification systems on campus utilize rainwater, recycling water, and waste water effectively through various circulation designs. The designs include: 1.Enable the water to circulate naturally because of the difference in height levels. 2. Allow water to be filtered and purified by gravels and plants before going to the ecological water pond. 3. Allow a small ecosystem to filter the water on its own and to revitalize life forms and organisms.

These natural water purification systems help the establishment of an internal water circulation system. It revitalizes water flows in the ecological pond and wetland and promotes water resource reuse. They can also purify the water and minimize water use on campus. The drainage function can help prevent flood.

Chung-li Elementary School in Taoyuan County – natural filtration is conducted via organisms in the water. It offers an ecosystem-friendly learning space for the children.

3.3 QUESTIONNAIRE SURVEY

In 2009, a questionnaire was given to the public at the time of the exhibit to learn about their level of familiarity and effectiveness of the exhibit. The visiting public from January 19 to February 21 served as the population. Purposive sampling was used for surveying at the National Science and Technology Museum exhibition site. For a 95% confidence level, the sample must be 50% of the population so the minimum number for the sample is 384. A total of 968 questionnaires were issued and 968 were received. After subtracting the eight questionnaires that were not completed, there were 960 effective questionnaires that could be analyzed.

As shown in Table 1, most of the visitors in the exhibition, about 60%, are female. In terms of age, children aged 6 to 12 account for about 50% of the visitors, followed by adults aged 30 to 39, youngsters aged 13 to 18, and adults aged 40 to 49. Details are indicated in Table 1.

Table 1. Demographic data of visitors surveyed

	<i>Item</i>	<i>No. of visitors</i>	<i>%</i>
Education background	Elementary school, or below	470	49.0
	Junior high school	78	8.1
	Senior high school	113	11.8
	University/college	243	25.3
	Graduate school, or above	56	5.7
Gender	male	395	41.1
	Female	565	58.9
Age	6-12	462	48.1
	13 ~ 18	121	12.6
	19 ~ 29	78	8.1
	30 ~ 39	155	16.1
	40 ~ 49	121	12.6
	50 and above	23	2.5

3.3.1 GENERAL DISCUSSION

A quiz of seven questions was given to visitors. The first question was to understand their awareness of Sustainable Campus promotion while the other six were to test their knowledge level of this subject. About 66.1% of visitors are aware of the campaign. About half (51.8%) of the visitors got the most difficult question right, and 90.2% got the easiest question right. Details are indicated in Table 2.

Table 2. Exhibition Efficacy

Questions	Answers	Correct answers	
		Counts	%
The timing in promotion of Sustainable Campus		862	90.2
The processes of natural water purification		654	68.8
The use of natural, permeable paving		705	74.3
The handling of high CO ₂ level in a room		841	88.5
Seeds and genetic diversity		493	51.8
The carbon footprint of taking an elevator		695	73.0

In terms of knowledge level of the "Sustainable Campus" subject, education background of elementary school or below as well as children aged 6 to 12 are comparatively lower, while junior high school and graduate school background as well as youngsters aged 13 to 18 are higher.

Adults aged 50 or above as well as university and graduate school background have a better understanding of "The processes of natural water purification" when compared with youngsters aged 13 to 18 as well as high school background.

Adults aged 40 to 49 as well as university and graduate school background have a better understanding of "The use of natural, permeable paving" when compared with youngsters aged 13 to 18 as well as high school background.

University and graduate school background have a better understanding of "The handling of high CO₂ level in a room" when compared with elementary school to high school background.

The question in regard to "Seeds and genetic diversity" is the most difficult question. Only 51.8% of respondents got this question right, while 68.8% to 90.2% got other questions right.

3.3.2 ANALYSIS

This exhibition enabled people who were originally unfamiliar with the concept of sustainable campus to understand its meaning and it was also beneficial to promoting the sustainable campus concept. Results showed that visitors did benefit from the exhibition in understanding more of the concepts of "Sustainable Campus," Results of the survey show that visitors with elementary to junior high school background have less understanding of the topic of "Sustainable Campus." Comprising the majority of visitors to our museum, these groups happen to be the ones unfamiliar with "Sustainable Campus."

Less respondents got the questions "The processes of natural water purification" and "Seeds and genetic diversity" right. As for the former one, although knowledge has been systematically processed, the vast amount of information makes it difficult for visitors to grasp without the aid from a docent, while the eye-catching water plants actually distract visitors from the point of focus. The contents of genetic diversity are comparatively more abstruse. The UK Pavilion in 2010 Shanghai EXPO highlighted an awesome Seed Cathedral featuring seeds of 60,000 different plants to demonstrate the concept of diversity. With limited space and budget, the exhibition in NSTM is simply incomparable.

The questionnaire is used to understand the public's level of understanding of the exhibit's content. Data analyses show that the promotion of Sustainable Campus campaign does benefit from the theme exhibitions. Further exploration into visitors' environment awareness and changes in attitudes and behaviors could be the focus of similar exhibitions in the future. Special exhibits in the future can study environmental awareness and changes in attitudes and behavior more deeply.

The museum curatorial team make the concept of sustainable campus achievement their own belief in practicing the structure of green museum. The improvements are as follows:

1. Recycling: make interesting science toys by using discarded 3D glasses from IMAX cinema.
2. Collect abandoned architectural materials for restructuring eco garden.
3. Build water recycling system: in order to filter and recycle water, the system collect the rain and make it flows between grass and underground collector automatically.
4. Energy education: besides green house and energetic creative competition, we also introduced ISO50001 standard and got the certificate in 2016. Improve energetic management has become one of the most important feature of the museum.

These are undoubtedly the practice of sustainable campus exhibit.

4 CONCLUSION

The inclusive display of environment knowledge is an important mission of sustainable campus promotion. A holistic view of natural environmental cycles and the implementation details of each field's technology must be adopted to achieve a balance between man and the environment.

Starting from presenting fragments of information in the 2004 exhibition to the systematic knowledge dissemination in the 2009 exhibition, NSTM grows together with the achievements in Sustainable Campus campaign in terms of exhibition approaches and technique. However, there is still room for improvement for the interpretation of certain contents.

Museum could think deep and innovate more in the promotion of environmental protection. With one of the best tools of inter-organizational learning, knowledge can be shared among all affiliates participating in the project, while continual communication and dialogue would enhance self-absorbing capability and create more chances for mutual learning [12]. Through the sustainable campus achievement exhibit and participation in environmental protection issues, the National Science & Technology Museum draws inspiration from the spirit of energy conservation and sustainability during the curatorial process to make progress towards the goal of becoming a green museum.

REFERENCES

- [1] Lin, C.-L. The Post Occupancy Evaluation of Partial Reformation in Sustainable School idea and the result appraisal for Changhua. Yunlinz. Chiayi County for 94-96 Years (In Chinese). Master's Thesis, National Yunlin University of Science & Technology, Yunlin, Taiwan, R.O.C. (2008).
- [2] Wang Xin. Environmental Education and Sustainable Campus, International Conference on Sustainable Development of Island, National Kaohsiung Normal University, Taiwan. (2000)
- [3] Yu, H.-H. A effect to probe into environment rebuilt for sustainable schools- A case study of an elementary school in Tainan city (In Chinese). Master's Thesis, National Cheng Kung University, Tainan, Taiwan, R.O.C. (2006).
- [4] Ministry of Education, R.O.C. (2006). Taiwan Sustainable Campus Project. From <http://www.esdtaiwan.edu.tw>.
- [5] Weng C-T, The development of wooden horse carriage (In Chinese). *Living Technology Education Journal*, 43(2). (2010).
- [6] Yang G-Z, *Environmental Education*, National institute for Compilation and Translation, Min- Wen Stationery Office, (1997).
- [7] Link, T. Models of sustainability Museum, citizenship, and common wealth. *Museum & social issues*, 1(2):173-190. (2006).
- [8] Han Pao-teh, The Conversation between Technology and Humanity. Lionart Stationery Office, (1999).
- [9] Eric J. Dorfman. *The Sustainable Museum: A Global Review. Proceeding of the International Symposium for the 100TH Anniversary of National Taiwan Museum. Challenges and Perspectives: New Roles of the National History Museum in Response to Global Changes.*
- [10] Tseng, J.-L. Planning a special exhibition from the Museum to inspire students to use scientific and technological creativity (In Chinese). *Living Technology Education Journal*, 43(2): 17-26. (2010).
- [11] Ger T-H. Research on the Waste Reuse of Wooden Displays-A Case Study on National Science and Technology Museum (In Chinese). Master's Thesis, National University of Kaohsiung, Tainan, Taiwan, R.O.C. P68. (2009)
- [12] Ger T-H. The Study Promote the environmental action in museum from the inter-organizational learning (In Chinese). *The museum 2010- An International Conference Exploring the Value, Purposes and Priorities of Museum at the Start of the 21st Century.* (2010)

APPENDIX

【Questionnaire】 Choose one correct answer for each question:

1. Have you ever heard of the term "Sustainable Campus," a campaign launched by Ministry of Education?
 (1) Yes (2) No (3) Not sure.
2. When was "Sustainable Campus," a campaign that would transform both software and hardware in campuses, launched?
 (1) After the flood caused by Typhoon Morakot on Aug/8/2009
 (2) After 921 Earthquake in 1999
3. To suit the measures to local conditions, land layout and vegetation in a campus can be used for natural water purification. If A denotes submerged plants, B denotes floating plants, and C denotes sandstone and emerged plants, what would be the correct sequence of purification?
 (1) A→B→C (2) B→C→A (3) C→B→A
4. One of the best practices of improving soil permeability and water retaining with local natural resources was presented by Tainan Shuang Chun Elementary School's improvement project of permeable paving. Do you know what material they used?
 (1) Clam shells (2) Fish scales (3) Pebbles
5. If the CO₂ level in a classroom is so high that might jeopardize our health, what would be the correct procedures to handle it that would achieve both energy saving and health and comfort? (A denotes turning on electric fans, B denotes Opening window, C denotes turning on extractor fans)
 (1) A→B→C (2) B→C→A (3) C→B→A
6. Collecting seeds of various plants, Kaoshiung Jin Jhu Elementary School established a Seed Observation Area. What would this practice be in terms of biodiversity in Sustainable Campus campaign?
 (1) Genetic diversity (2) Ecological diversity (3) Species diversity
7. Refer to the calculation of Carbon Footprint in the exhibition, calculate and covert the electricity consumed in operating an elevator to move one storey into CO₂ emission.
 (1) 0.218kg (2) 0.436kg (3) Not sure

【Basic Information】

1. What is your gender? Male Female
2. Which one best describes your age?
 6~12 13~18 19~29 30~39 40~49 50 or above
3. What is your education background?
 Elementary school and below Junior high school High school University/college Graduate school and above

Date:

No.

L'ÉMERGENCE DE LA DÉMOCRATIE DANS LA PROVINCE DU NORD-KIVU EN RÉPUBLIQUE DÉMOCRATIQUE DU CONGO

Isaac N'KANGO MAFUTA

Assistant de 2^{ème} Mandat,
Faculté des Sciences Sociales, Administratives et Politiques,
Université de SEPRMAD/GOMA, RD Congo

Copyright © 2016 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: On the menu of this study is the issue related to the brakes of the emergence of democracy in North Kivu province. This space has become a battlefield where is rooted chronic evil incarnate glazed societal crisis of multifaceted violence. The latter is accompanied by a procession of cruelty on human lives. This state of affairs illustrates a province in the Democratic deficits despite efforts by governments, since the results are mixed for an inculturated democracy on the North-Kivusien area of the Democratic Republic of Congo.

KEYWORDS: Democratic Emergence, Democratic Tolerance, Indicators of Democracy in North Kivu, Rule of Law in North Kivu, Democracy inculturated.

RESUME: Au menu de cette étude, figure la question liée aux freins de l'émergence de la démocratie en province du Nord-Kivu. Cet espace est devenu un champ de bataille où s'enracine le mal chronique incarnant la crise sociétale émaillée de la violence multiforme. Cette dernière est accompagnée d'un cortège de cruautés sur les vies humaines. Cet état de faits illustre une province en déficits démocratique en dépit des efforts fournis par les gouvernants, car les résultats restent mitigés pour une démocratie inculturée sur l'espace Nord-Kivusien de la République Démocratique du Congo.

MOTS-CLEFS: Emergence démocratique, Tolérance démocratique, Indicateurs de la Démocratie au Nord-Kivu, Etat de droit au Nord-Kivu, Démocratie inculturée.

1 INTRODUCTION

L'objet de cette étude porte sur les freins de l'émergence de la démocratie dans la province du Nord-Kivu ; laquelle est devenue un champ de bataille où les canons fumaient, les droits humains violés et le nationalisme exacerbé.¹ Dans cette contrée de la république, les crises de société sont devenues un mal chronique avec leur cortège de cruauté à l'encontre de la personne humaine.

De plus, depuis plusieurs années, les expériences démocratiques au Nord-Kivu se soldent régulièrement par un échec retentissant comme si c'était une fatalité car l'état dans lequel il se trouve actuellement prouve suffisamment que le peuple de cette partie de la RDC traverse une période misérable très accentuée suite aux multiples tueries, viols, pillages

¹ Marzzi AHTISAA, *Démocratie et société civile dans l'Europe du futur*, Institut de Coopération internationale de la conférence allemande pour le développement, Berlin, 1999-2002, pp.37-38

systematiques, etc. qui sont perpétrés par les personnes indésirables. Ceci rend le peuple peureux, frustré, prisonnier, sans espoir de vie et n'attend que l'intervention du Messie pour quitter dans cet enfer.

Cette situation dramatique ci-haut soulevée, malgré sa dimension socio-politique, économique et culturelle sur le plan interne et externe, n'a pas du tout intéressé certains spécialistes en démocratie qui, pourtant avaient déjà écrit quelques documents sur ce domaine. C'est pourquoi, ces conditionnements de vie inhumaine, dégradante, voire chaotique, où les droits de l'homme ne sont plus respectés, a suscité notre curiosité scientifique en nous permettant de broser quelques aspects en rapport avec l'émergence ou pas de la démocratie au Nord-Kivu.

L'intérêt que nous portons à cette étude est que nous voulons faire voir à la communauté toute entière ainsi qu'aux autorités politico-administratives tant nationales que provinciales que, en lisant ce travail, qu'elles sachent que le peuple Nord-kivussien est longtemps sévi ; d'où la démocratie n'existe pas dans sa province. Il faut alors le libérer et lui remettre une vie normale au même titre que d'autres créatures de Dieu vivant ailleurs.

En menant une telle étude, nous nous sommes assigné comme objectif principal de relever les problèmes majeurs qui bloquent l'émergence de la démocratie dans la province du Nord-Kivu.

Méthodologiquement, nous avons essayé de collecter des informations nécessaires sur base de questionnaire, documents consultés ; qui nous ont permis de mesurer ou d'apprécier le degré et/ou le niveau de la démocratie dans cette partie de la R.D Congo, tout en procédant par la vérification de l'existence des indicateurs de la démocratie ci-dessous, tels qu'énoncés dans la plateforme d'action de Beijing² :

- Des élections libres, équitables et régulières ;
- Un gouvernement responsable ;
- Un gouvernement ouvert et transparent ;
- La protection des droits de l'homme ;
- La participation des citoyens ;
- La participation des femmes.

A part l'introduction et la conclusion, les indicateurs de la démocratie, les obstacles à l'émergence de la démocratie constituent les grandes articulations de cet article.

2 LES INDICATEURS DE LA DEMOCRATIE

Il existe des principes fondamentaux de la démocratie qui ne sont pas négociables. Nous nous garderons bien de dire que si tous les éléments que nous allons énumérer ci-dessous ne sont pas présents dans tel pays, ce dernier n'est pas une démocratie. De même ceci n'est pas une liste qui permettrait à un pays, une fois coché tous les éléments de s'auto-déclarer démocratique. Il doit aussi y avoir, de manière pérenne, une adhésion de la part du personnel politique aux principes fondamentaux de la démocratie.

Parmi ces derniers, citons :

2.1 DES ELECTIONS LIBRES EQUITABLES ET REGULIERES

Un gouvernement démocratique est élu par le peuple. Les élections dans une démocratie doivent être ouvertes, indépendantes et impartiales. Elles doivent avoir lieu dans un esprit de respect, de sécurité individuelle et dans la protection du secret de bulletin de vote. L'intégrité du pouvoir électoral représente un facteur important de même que le degré d'équité et de justice du processus électoral envers ses citoyens.³

De ce qui précède, le fait que les gens soient de plus en plus écartés de l'exercice du pouvoir dans nos sociétés est l'un des nouveaux problèmes cruciaux. Beaucoup de gens sentent que le pouvoir est entrain de leur échapper pour disparaître dans un labyrinthe de systèmes, à tel point qu'ils ne prennent même plus la peine d'aller voter. Le pire de tout cela, c'est que

² Lire à cet égard : Plate forme d'action de Beijing, septembre 1995

³ Plate forme déjà citée, pp.7-8

les mouvements anti-démocratiques, le nationalisme paranoïde et la xénophobie resurgissent aux quatre coins de la province du Nord-Kivu.

Par ailleurs, les élections ne sont qu'un appel à l'opinion publique. Sans elle, les élections ne sont que gesticulations. Elles n'ont aucune valeur. Les élections véritables supposent que des listes électorales aient été soigneusement élaborées ; que la population veille à ce que toute fraude soit évitée : les urnes transparentes. La population doit être présente par ses représentants aux procédures de comptage et de vérification des résultats. Ceux-ci doivent être sanctionnés par la haute cour de justice. Les parties mises en minorité sont tentées de contester les résultats lorsque ceux-ci n'ont pas été strictement contrôlés. L'opinion publique doit être tenue au courant des problèmes qui se sont posés lors du déroulement des élections.⁴

Au vu des paramètres ci-haut soulevés, la province du Nord-Kivu marche à l'encontre d'eux, car sa population a été trompée et manipulée du fait que les élections n'étaient qu'une comédie en ce sens que dans la ville de Goma et ses périphéries on a vu certains électeurs aveugles et analphabètes, voter pour les candidats qui n'étaient pas de leurs choix. En outre, dans les isoloirs, les agents de la CEI avaient des bouts de papiers portant des noms de leurs candidats chéris qu'il fallait distribuer à certaines personnes non informées et non instruites. De plus, des chuchotements, des soufflements des noms, des hachures de case de vote par empreinte digitale, pour ne citer que cela, étaient en vogue dans plusieurs centres de vote. Bref, en matière d'élection le peuple Nord-kivussien n'a pas été libre.

2.2 UN GOUVERNEMENT RESPONSABLE

Le pouvoir du gouvernement de mener des politiques et d'établir la législation sont des pouvoirs publics. En tant que tels, ils doivent répondre de leurs fonctions, de leurs devoirs et de leurs responsabilités. Ce pouvoir ne doit pas être utilisé arbitrairement et doit être exercé dans un cadre législatif qui, dans bien des pays, est la constitution. Celle-ci fournit des contrôles contre les abus du pouvoir de l'Etat et pour cela définir la séparation de l'exécutif, du législatif et du judiciaire.

Les différentes branches du gouvernement peuvent avoir le rôle de contrôle et de contre poids pour tout abus de pouvoir. Par exemple, le pouvoir judiciaire peut contrôler l'exercice du pouvoir mené par le législatif et l'exécutif. Ceci s'appelle la séparation des pouvoirs. Il statue sur la légalité des actions et des décisions du gouvernement. Dans une démocratie, personne ne peut être au-dessus de la loi. Cette adhésion à la règle de droit est primordiale pour un gouvernement responsable. En principe, un pays qui se veut démocratique doit faire la part des choses entre le pouvoir exécutif, pouvoir judiciaire et pouvoir législatif.

En toute honnêteté, les magistrats du Nord-Kivu ainsi que les députés réunis au sein de l'Assemblée Provinciale, tous ne sont pas indépendants dans l'exercice de leurs fonctions, car pour la plupart des fois, ils sont corrompus. Tel fut le cas où les députés provinciaux, en date du mars 2007 ont fait une motion de défiance au gouverneur de province, mais parce que ce dernier leur a remis une colossale somme, ces parlementaires ont fermé leur bouche et l'hémorragie financière continue à se faire sentir dans le chef de ces autorités provinciales.

Du côté de la justice, c'est la même chose. Etant donné qu'elle est politisée pour le moment, il paraît difficile de connaître qui peut avoir raison pour telle ou telle autre affaire. Souvent elle subit des injonctions de la part de telle ou telle autre autorité politico-militaire ou parti politique. Ce qui est le cas d'ailleurs de l'incarcération de l'ex-député Gatchaba (membre du CNDP), au niveau de la prison centrale pour avoir castré plusieurs gens à Mushake et Nyanzale et violé plusieurs filles de moins de quatorze ans parmi lesquelles il y avait une de cinquième de l'Institut Mikenko.

Après avoir passé quelques jours en prison, le mouvement politico-militaire CNDP a dû dépêcher à Munzenze (prison centrale de Goma), l'ex-général Bosco Ntaganda avec ses troupes pour aller assiéger cette prison afin de libérer en date du 20 mai 2009, cet ex-député emprisonné et le faire fuir jusqu'à Kigali.

2.3 UN GOUVERNEMENT OUVERT ET TRANSPARENT

Le processus de gouvernement doit être visible et compris par la population. Cela signifie que les gouvernements doivent se mettre en situation, d'être observés et critiqués par l'électorat. Une telle transparence permet alors au gouvernement de

⁴ Pierre de Quirini, *Comment bâtir la démocratie. Le peuple est le premier artisan de la démocratie. Il faut le rendre capable d'y collaborer*, Imprimerie du CEP, Kinshasa, 1992, p.57.

répondre de la légitimité de ses actions. Ce qui n'est pas la réalité de la province du Nord-Kivu où le gouvernement provincial, par son programme d'action, n'a pas un service public efficace d'une administration qui rende des comptes clairs de sa gestion.

De plus, dans le gouvernement ouvert et transparent, l'ensemble des médias est l'organe qui le plus communément entreprend d'observer et de critiquer les actions du gouvernement. Un gouvernement transparent implique que le droit d'accéder à l'information est protégé, de même que la liberté de la presse. Une presse libre peut seulement remplir son rôle correctement que si elle a librement accès à la documentation et aux autres informations officielles. Un gouvernement qui agit de manière transparente suggère qu'il est honnête et intègre.

Par contre, au Nord-Kivu, ce qui vient d'être sus dit n'est pas mis en application car la presse est prise en otage par certains leaders politiques ; et pourtant elle devrait être très indispensable et permettre la protection des sources des journalistes comme Pierre angulaire⁵

C'est dans des circonstances pareille que certains journaliste tels que MULUNDU FOCAS et PRIMO MUKAMBILWA ont été visités dans leurs maisons et plusieurs de leurs biens de valeur ont été emportés, pour avoir dénoncé l'occupation de la zone neutre entre le Rwanda et le Congo par les Rwandais, et déclaré les exactions commises par les leaders politiques du CNDP en violant les femmes et filles et en pillant systématiquement des biens pour les paisibles passants ; ceci au mois de février 2009

2.4 LA PROTECTION DES DROITS DE L'HOMME

Un système de droit de l'homme, ayant un ordre du jour normalisé garantissant un standard minimum des droits individuels et quelques principes fondamentaux sur la manière dont l'Etat doit gérer ses relations avec ses citoyens est nécessaire. Ces principes fondamentaux doivent faire partie du comportement et des valeurs des individus et doivent être enracinés dans la culture politique de la société. Enfin, les droits civils et politiques des citoyens doivent être protégés par l'Etat. Toute infraction aux droits des individus par l'Etat doit faire l'objet des sanctions judiciaires. Les droits politiques concernent les pratiques d'une culture démocratique et incluent la liberté d'expression, la liberté d'association, de droit de vote, le droit de se présenter aux emplois de la fonction publique.

De ce qui précède, le cas du Nord-Kivu est contraire car, l'octroi des postes administratifs ou politiques est conditionné par l'appartenance ethno-tribale, c'est-à-dire pour avoir un poste de quelque nature que ce soit, il faut être dans l'une des tribus fortes : Rwandophone ou Nande. Or, l'universalité des droits de l'homme signifie que ses droits sont fondés sur la nature et la dignité humaine et qu'ils ont vocation, à leur âge, leur sexe, leur ethnie, leur religion. Peu importe donc les différences de cultures ou de niveaux de développement des sociétés concernées⁶

De plus, toutes sortes d'abus notamment les cas de viol, d'atrocités criminelles, incendies des maisons, la corruption, le tribalisme, etc. qui ne font que se perpétuer nuits et jours sans cesse ; sont de stricte observance dans ce coin de la République. Ce qui prouve à suffisance que les droits de l'homme n'y existent donc pas.

Et pourtant, la déclaration universelle des droits de l'homme de 1948 considère le respect des droits de l'homme comme un idéal dont la réalisation semble nécessiter la reconnaissance du droit au développement⁷

2.5 LA PARTICIPATION DES CITOYENS

Un gouvernement doit sa légitimité au rôle que ses citoyens jouent dans son élection et à la mise en œuvre de ses responsabilités. La société civile joue un rôle important pour questionner la responsabilité du gouvernement et sa transparence, notamment lorsque les partis d'opposition sont faibles.

⁵ Dominique Breillat ; *libertés publiques et droits de la personne humaine*, Gualino, Paris, 2003, p.250

⁶ Filiga Michel SAWAGO ; *fondements anthropologiques des droits de l'homme : exigence du respect des droits de l'homme dans différentes cultures et sociétés*, éd. Institut Africain des Droits de l'Homme et de la Démocratie, Février, 2004, p. 18

⁷ Dieudonné KALINDYE BYANJIIRA et All, *du respect des droits des prisonniers de guerre pendant des conflits armés en RDC, Kinshasa*, éd. Institut Africain des Droits de l'Homme et de la Démocratie, Février 2004, p.1

Eu égard de ce qui vient d'être signalé ci-haut, le gouvernement tant national que provincial est devenu irresponsable. La preuve en est que, la province du Nord-Kivu se trouve actuellement à un état d'agression où des guerres qui ne lui donnent pas la possibilité de mettre au point et de façon satisfaisante sa propre démocratie. Or, on devrait veiller à la sécurisation des personnes et de leurs biens, qui est la mission traditionnelle et régaliennne de l'Etat.

La participation des femmes : sans la participation active des femmes et la prise en compte des perspectives féminines à tous les niveaux du processus de prise de décisions, les buts de développement égalitaire et de paix ne peuvent pas être atteints.

Ici, l'exemple du Nord-Kivu est patent, parce que si nous prenons seulement l'exécutif provincial ; aucune représentativité féminine pour le moment présent. Et pourtant, il y a déjà plusieurs femmes cadres dans la province et entre temps l'on ne cesse de clamer tout haut la parité entre homme et femme.

3 LES OBSTACLES A LA DEMOCRATIE AU NORD-KIVU

Même si l'ensemble du peuple congolais aspire, peut-être sans le savoir, à la démocratie, celle-ci demandera un immense effort. Faire une constitution, organiser des élections, sans y préparer le peuple, ne peut pas aboutir.

Ainsi, plusieurs causes ont été à la base de non-émergence de la démocratie au Nord-Kivu, entre autres :

- Ignorance de la loi : ignorant la loi, les populations ne se sentent pas protégées. Elles se sentent à la merci du premier venu. A ce niveau, la raison appartient à celui qui est fort financièrement. La corruption est donc devenue monnaie courante.
- La crise économique a aussi une grande responsabilité, les autorités étant mal payées ou pas du tout, elles luttent pour la survie. C'est ainsi que dans chaque entité de cette province, chaque agent de l'Etat s'est transformé en perceuteur d'impôts ou des taxes. L'exemple du territoire de Walikale est patent où on cherche même des recommandations auprès des autorités provinciales pour être taxateur ou perceuteur aux différentes barrières de Ndjingala et de bisie. De même au niveau de Bunagana, à la frontière entre le Congo et l'Uganda ; les agents de l'Etat mènent des démarches pour être soit perceuteur d'impôt ou occuper un poste financier.
- La crainte que suscite le monde moderne et ses complexités. Ainsi la procédure judiciaire est considérée avec effroi. A Walikale, il y a un cas frappant où le chef d'Etat major de la 8^{ème} Région militaire FARDC a usé de son pouvoir militaire pour exploiter illégalement des ressources minières dans la collectivité secteur de Bakano. Et les propriétaires de ces collines minières ont manqué quoi faire.
- Les ONG qui luttent pour le Droit de l'Homme n'ont que peu de contacts en milieux ruraux. C'est pour cette raison qu'on verra dans presque tous les territoires de cette juridiction Administrative, bon nombre d'ONG sont implantées seulement à Beni, Lubero, Rutshuru, parce que l'actuel gouverneur de province du Nord-Kivu est de Lubero, et son prédécesseur est de Rutshuru. Mais dans les autres contrées, la population mène une vie misérable car pas d'eau potable, de soins médicaux appropriés, etc.
- Les cadres de églises qui sont présents en milieu rural sur toute l'étendue de cette province, n'ont pas reçu la formation nécessaire pour encadrer le peuple ; exceptés quelques-uns. Ils sont incapables de répondre aux besoins de « formateurs » à la démocratie. Or se serrait un service urgent pour éviter tout dérapage incontrôlé.⁸

Somme toute, les éléments énumérés ci-haut prouvent à suffisance qu'il y a possibilité de parler de non-émergence de la démocratie au Nord-Kivu, car dans cette province il n'y a ni développement ni stabilité politique étant donné que les droits individuels et collectifs sont marginalisés, les libertés fondamentales qui vont de pair avec la justice et la solidarité ne sont pas prises en considération.

4 CONCLUSION

Le Nord-Kivu est, au stade actuel une province à « déficit démocratiques » car elle est à la dérive de la démocratie par ce que les élections libres, équitables et régulières ; le gouvernement responsable, un gouvernement ouvert et transparent, la

⁸ Pierre de QUIRINI ; Op. Cit ; p.60

protection des droits de l'homme...n'y existent pas. Bref, elle se met en place sous les signes de l'incompétence politique, de la corruption morale, du déni des droits humains et de l'aventurisme le plus destructeur, du grand dam de tous ceux qui avaient cru que nous construirions une province forte, prospère, rayonnante, libre et inventive. D'où, il faut une démocratie inculturée c'est-à-dire pensée en fonction des intérêts de sa population et de sa promotion ; dans un Etat de droit.

Et pour y arriver, il faut la tolérance, qui permet d'éviter l'exclusion ou l'ostracisme politique ; le patriotisme, qui privilégie l'intérêt général de la nation en lieu et place des intérêts individuels, égoïstes et inavoués ; la solidarité sans laquelle aucun développement positif n'est possible, etc.

REFERENCES

- [1] Marzzi AHTISAA, *Démocratie et société civile dans l'Europe du futur*, Institut de Coopération internationale de la conférence allemande pour le développement, Berlin, 1999-2002.
- [2] Pierre de Quirini, *Comment bâtir la démocratie. Le peuple est le premier artisan de la démocratie. Il faut le rendre capable d'y collaborer*, Imprimerie du CEP, Kinshasa, 1992.
- [3] Dominique Breillat, *Libertés publiques et droits de la personne humaine*, Gualino, Paris, 2003.
- [4] Filiga Michel SAWAGO, *Fondements anthropologiques des droits de l'homme : exigence du respect des droits de l'homme dans différentes cultures et sociétés*, éd. Institut Africain des Droits de l'Homme et de la Démocratie, Février, 2004.
- [5] Dieudonné KALINDYE BYANJIRA et All, *Du respect des droits des prisonniers de guerre pendant des conflits armés en RDC*, Kinshasa, éd. Institut Africain des Droits de l'Homme et de la Démocratie, Février 2004.
- [6] Plate-forme d'action de Beijing, septembre 1995.

L'ORGANISATION DES ELECTIONS PLURALISTES, LIBRES, DEMOCRATIQUES ET TRANSPARENTES DE 2006 EN TERRITOIRE DE WALIKALE

Isaac N'KANGO MAFUTA

Assistant de 2ème Mandat, Faculté des Sciences Sociales, Administratives et Politiques,
Université de SEPRMAD/GOMA, RD Congo

Copyright © 2016 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: The iconic issue of transparency in the organization of the 2006 elections in WALIKALE territory in North Kivu in the Democratic Republic of Congo is at the heart of this debate. The result is a paradox between the qualification of the transparent elections held on this space and the observed reality that indicates the non-transparent, due to fraud and lack of freedom of electoral organization. This denial of transparency of these elections does not guarantee peace in Congo - Kinshasa and North Kivu in general and in particular WALIKALE.

KEYWORDS: Elections, Freedom of electoral organization, Electoral fraud, Consolidation of democracy, Electoral transparency.

RESUME: L'emblématique question de la transparence dans l'organisation des élections de 2006 en territoire de WALIKALE au Nord-Kivu en République Démocratique du Congo est au cœur de ce débat. Il en résulte un paradoxe entre le qualificatif de la transparente des élections organisées sur cet espace et la réalité observée qui indique la non transparente patente, du fait de la fraude et du manque de liberté d'organisation électorale. Ce déni de la transparente de ces élections ne garantit pas la consolidation de la paix au Congo-Kinshasa et au Nord-Kivu en général et à WALIKALE en particulier.

MOTS-CLEFS: Elections, Liberté d'organisation électorale, Fraude électorale, Consolidation de la démocratie, Transparence électorale.

1 INTRODUCTION

Depuis le discours présidentiel du 24 Avril 1990 mettant fin à l'ère du parti – Etat, le Zaïre (Congo) vit dans l'attente des consultations électorales qui devront établir la troisième République à savoir : le référendum relatif à l'approbation du nouveau projet de la constitution déjà promulgué, les élections municipales, territoriales, législatives et présidentielles pour mettre en place les nouvelles institutions en chantier.

On parle beaucoup d'élections jusqu'à présent et on les exige avec force. Elles constituent le moyen le plus sûr de mettre fin aux divergences et violences sociopolitiques qui déchirent cette société. Le peuple congolais étant souverain, il faut sans tarder s'en remettre à lui pour résorber la crise sans peur des élections; quiconque est impopulaire seul est dictateur, refuse d'affronter vite les élections qui constituent la manifestation de la Démocratie, de la liberté politique, il faut pour tout dire aller tout droit aux élections¹.

¹ Clément IRUNG TSHITAMBAL, « Les élections en question », in *Zaïre-Afrique*, n^o287, septembre, 1994, P.389

Les élections présidentielles, législatives et provinciales organisées en RDC, le 30 Juillet et le 20 Octobre 2006, constituent l'une des pierres angulaires dans l'histoire du Congo et ont constitué le premier scrutin national en RDC depuis 1965. L'instauration des institutions démocratiques, leur consolidation et leur professionnalisation demeurent parmi les grands défis en RDC. Avec les premières élections pluralistes, la RDC se trouve au début de son processus de démocratisation.

Les citoyens congolais semblent être informés et être à la mesure d'apprécier rationnellement ce qu'un système politique, comme tel, peut faire dans les conditions toujours optimales².

Dans le territoire de WALIKALE, il s'est posé un certain nombre de problèmes majeurs liés à la tenue des élections de 2006 entre autre: difficultés logistiques de couvrir tous les électeurs à son intérieur, et pratiquement exempt des routes, une partie de sa population située à très longue distance dépourvue de cartes d'identités et aucun recensement depuis 1984, insécurité dans certains groupements (Waloa-Uroba, Waloa-Yungu, Ihana), ainsi que des tensions politiques dans d'autres, et pression inhérente au changement qui anime la population,...

De ce qui précède, on peut se demander : ces élections de 2006 en territoire de Walikale ont-elles été transparentes ou non. Au regard à cette question, elles seraient confrontées ou butées à certains obstacles d'ordre divers, d'où la fraude, ce qui implique la non transparence et pourtant, ses élections ont été déclarées libres, démocratiques et transparentes. Cette situation ci-haut soulevée a suscité notre curiosité scientifique et nous a permis d'en discuter sommairement.

Cette étude a mobilisé une méthodologie nourrie par le cheminement dialectique soutenu par la synergie des techniques du questionnaire, d'interview ainsi que documentaire fouillée pour la récolte des données d'analyse courante.

Hormis l'introduction et la Conclusion, cette réflexion est subdivisée en deux axes suivants : les mobiles de l'organisation des élections en territoire de WALIKALE. Et le débat sur la transparence au non des élections organisées en 2006 à WALIKALE.

2 LES MOBILES DE L'ORGANISATION DES ELECTIONS EN RDC EN GENERAL ET DANS LE TERRITOIRE DE WALIKALE, EN PARTICULIER

Depuis son indépendance, le 30 Juin 1960, la République Démocratique du Congo est confrontée à des crises politiques récurrentes dont l'une des causes fondamentales est la contestation de la légitimité des institutions et de leurs animateurs. Cette contestation a pris un relief particulier avec les guerres qui ont déchiré le pays de 1960 à 2003.

Le caractère libre de l'élection était négligé et oublié au profit d'un régime qui avait maintenu une seule personne au pouvoir, non pas par la volonté populaire, mais parce qu'il avait la force politique, économique et militaire⁴.

En vue de mettre fin à cette chronique de légitime et de donner au pays toutes les chances de se reconstruire, les délégués de la classe politique et de la société civile, forces vives de la nation, réunies en Dialogue Inter Congolais, ont convenu, dans l'accord global et inclusif signé à Pretoria en Afrique du Sud, le 17 Décembre 2002, de mettre en place un nouvel ordre politique, fondé sur une nouvelle constitution démocratique sur base de laquelle, le peuple congolais puisse choisir souverainement ses dirigeants au terme des élections, démocratiques, transparentes et crédibles⁵. La tenue des élections est un élément clef pour passer d'une situation de sortie de conflit à celle d'un Etat véritablement démocratique, unifié et stable.

Etymologiquement, le mot « Election » vient du mot latin « Electio », dérivé du verbe « Eligere » qui signifie « Choisir » à partir de ce sens étymologique, et en se situant dans le champ de la théorie Démocratique qui nous intéresse ici, on peut soutenir que l'élection est par essence, l'acte par lequel le peuple choisit ses représentants pour exercer le pouvoir à son nom. Par elle donc, le peuple leur délègue le pouvoir dont il le titulaire originaire est dans la théorie démocratique, le détenteur suprême.

² FONDATION KONRAD ADENAUER, *Le processus électoral de 2006 en RDC. Perception de la population, Faculté catholique, Kinshasa, 2008, P.1.*

³ *Rapport spécial du secrétaire général du conseil de sécurité sur les élections en RDC, P.5.*

⁴ LUNDA BULULU, *conclusion des traités en droit constitutionnel zairois, Edition de l'université de Bruxelles, 1984, pp.259-264, cité par TOENGAHO LOKUNDO et LONGOLI MOKOMBOLI, Op. cit., p.23*

⁵ *La constitution de la République Démocratique du Congo, mars 2006, P.2.*

Elle apparaît comme étant essentiellement le mode par lequel les gouvernés peuvent maintenir les gouvernants à leur poste ou les destituer de manière à les remplacer par d'autres. Elle constitue donc un mode d'expression décisif de la volonté du peuple, de participation politique, une technique pacifique par laquelle on devient gouvernant, un procédé par lequel les gouvernés s'affirment les maîtres des gouvernants dans la gestion démocratique d'aujourd'hui ; elle est un élément essentiel de la démocratie moderne qui est fondamentalement représentative et qui se définit comme un éclat du peuple de s'apprécier le droit du peuple de désigner (par les élections) et de contrôler librement le gouvernement de la nation et d'exercer effectivement ce droit en son nom pour le plus avoir et le plus être de tous⁶.

C. DEBBASCH et Al. considèrent l'élection comme un mode de désignation par les citoyens et les représentants ou leurs délégués, soit à l'échelon local, soit à l'échelon national, soit encore dans un cadre professionnel. Ils distinguent l'élection politique de l'élection administrative. La première (élections municipales, cantonales, régionales, législatives, sénatoriales, présidentielles) est soumise à un régime plus rigoureux que la deuxième (élections universitaires, des délégués d'entreprise, etc.) en raison de sa nature (elle s'adresse aux citoyens) et de son enjeu (la direction de la collectivité, Etat)⁷.

Pour R. BOUDON et F. BOURRICAUD, l'élection est une des institutions caractéristiques des régimes modernes. Elle est pratiquée avec des degrés d'efficacité et de sincérité variables un peu partout dans le monde contemporain. Elle peut éclairer les détenteurs de la souveraineté sur l'intensité des humeurs, la configuration des intérêts, bref sur les opinions de leurs sujets. Elle constitue alors un sondage de grandeur nature. Elle est de nos jours, la technique démocratique du choix des gouvernants⁸. Une technique par laquelle les gouvernants sont choisis par les gouvernés. Elle peut se présenter soit sous forme de système majoritaire, soit sous le système de représentation proportionnel, soit encore sous le système mixte.⁹

Quintessence de la démocratie moderne, l'élection est par essence indissolublement liée à la liberté, assise indispensable de tout régime politique qui se veut démocratique. Il n'y a pas de vraies élections (démocratiques) aujourd'hui, là où il n'y a pas possibilité de choisir personnellement entre plusieurs partis rivaux, plusieurs candidats, plusieurs programmes d'actions et idéologies, plusieurs projets de société. Et il n'y a pas du tout de choix, c'est une banalité de le dire, là où il n'y a pas de liberté quand on est obligé de mettre dans l'urne un bulletin de vote donné, de voter pour tel ou tel candidat, quand on est soumis à une certaine contrainte physique ou morale.

Ainsi la liberté du peuple de choisir ses représentants qui vont exercer à son nom, le pouvoir exige nécessairement que soient assurées les libertés individuelles fondamentales notamment la liberté de déplacement, d'option, de presse et de discussion.¹⁰

Néanmoins, dans cette contrée du pays, l'administration était à grande partie absente et où les forces armées de la RDC n'ont pas encore la preuve de leur aptitude à régler les problèmes de sécurité liés à la présence des groupes MAI-MAI et des FDLR ; surtout dans les groupements précités. La population y était prise en otage. Elle avait quelques fois peur de quitter son village d'origine pour aller voter à quelques kilomètres où se trouvaient certains bureaux de vote. Or chaque citoyen congolais doit jouir de la plénitude de ses droits civils et politiques¹¹.

Ici, absolument c'est le peuple qui choisit et élit ses représentants, il faut absolument que le suffrage soit universel et égal. En d'autres termes : il faut que le corps électoral soit formé de manière à comprendre tous les citoyens actifs de la nation (se jouissant du droit de suffrage, élisent leurs représentants sans contrainte indépendamment de pressions extérieures).

En fin, les vraies élections démocratiques exigent que le résultat de vote soit exact c'est-à-dire qu'il corresponde effectivement à celui des volontés de tous les électeurs. Et ceci n'est pas possible s'il y a des pressions et manipulations

⁶ Clément IRUNG TSHITAMBAL, Article déjà cité, p.8.

⁷ C. DEBBASCH et Al, *Lexique de politique*, 7^{me} édition, Dalloz, Paris, 2001, p.4

⁸ E. MPONGO-BOKAKO BAUTOLINGA, *Institutions Politiques et droit constitutionnel*, Tome 1, *Théories générales des institutions politiques de l'Etat*, Editions universitaires Africaines, Kinshasa, 2001, p. 226

⁹ P. MILUMBATI NGASHA, *Sociologie politique*, édition Africa, Lubumbashi, 1988, pp.9-10

¹⁰ Clément IRUNG TSHITAMBAL, Article déjà cité, p.10.

¹¹ La loi électorale n° 06/006 du 09 mars 2006 portant des élections Présidentielles, Législatives, Provinciales, Urbaines, Municipales et Locales, paragraphe 2, Article 120, p.15.

électorales, si les électeurs et les candidats à élire (ou certains d'entre eux) sont contraints à se plier aux déterminismes socioculturels, politiques et/ou économiques, s'ils sont soumis à une contrainte physique et/ou morale¹².

Par ailleurs, la réussite de la démocratie dans une société suppose une culture électorale de la part des citoyens. Cette culture diminue les possibilités d'erreur et de fraude électorale. Ainsi, la tenue d'élections libres et transparentes exige une préalable minutieuse, laborieuse et rigoureuse des diverses étapes conduisant à l'élection des gouvernants. Mais cette condition générale réclame la réalisation de plusieurs tâches et conditions spécifiques sur le plan à la fois politique ; juridique, technique et managérial¹³.

En territoire de Walikale, cette situation soulevée ci-haut pêche contre les réalités vécues d'après les résultats obtenus qui se présentent comme suit :

LES ELECTIONS PRESIDENTIELLES DE 2006 (2^{ème} tour)

Nombre de BVD fonctionnels	211
Nombre de BVD compilés	211
Electeurs attendus	113489
Votants	93009
Taux de participation	81,95
Nuls	1717
Bulletins Blancs	247
Suffrages	91045

A GAGNE : KABILA KABANGE Joseph

N°	Nom, Post-nom, Prénom	Voix obtenues	Partis Politiques
1	BEMBA GOMBO Jean-Pierre	1502	MLC
2	KABILA KABANGE Joseph	89543	PPRD
	TOTAL	91045	

L. de SAINT MOULIN tire deux conclusions du premier tour d'élection présidentielle de juillet 2006 en RDC. La première était que la population a, dans l'ensemble du pays fait preuve de maturité politique plus que les politiciens. Certains de ces derniers s'étaient sans doute laissés manipulés et pouvaient savoir qu'ils n'étaient pas des candidats sérieux à la présidence du pays. Mais la population n'a pas été dupe et n'a pas dispersé ses voix sans réflexion. Un travail considérable d'éducation civique a manifestement été réalisé dans la plupart des circonscriptions, et c'est là où il est resté le plus limité que de nombreux candidats ont parfois obtenu 1% des voix. Une seconde conclusion était que la vie politique du pays avait besoin d'un élargissement à l'échelle des problèmes de la nation¹⁴. Tout le monde avait pris conscience de la diversité de l'espace national et de la nécessité d'un discours et d'actions qui n'en restent pas à des principes et à des stratégies générales, mais qui rejoignent les problèmes des toutes les composantes de la population. Aucun des candidats au premier tour de l'élection présidentielle ne disposait de la base nationale nécessaire pour être élu à ce scrutin¹⁵.

Analysant le deuxième tour de l'élection présidentielle d'octobre 2006, L. de SAINT MOULIN a relevé les difficultés ayant caractérisé comme suit : la première a été celle de la maîtrise insuffisante de la géographie du pays. La seconde difficulté étant venue du manque de vision suffisamment claire du processus dans lequel on s'engageait. Trop heureux de voir la population se faire massivement enrôler, on n'a pas crû nécessaire d'insister sur le fait que le lieu d'enrôlement devait être

¹² Clément IRUNG TSHITAMBAL, *Op.cit*, P.12.

¹³ P. NGOMA-BINDA, *la participation politique. éthique civique et politique pour une culture de paix, de démocratie et de bonne gouvernance, deuxième édition, revue et augmentée, institut de formation et d'études politiques, Kinshasa, 2005, pp.484-491*

¹⁴ L. SAINT MOULIN (de), « RDC, les principaux défis de l'après élection » in *Centreavec*, Bruxelles, juin 2006, pp.1-7 ; document d'analyse et de réflexion disponible sur <http://www.Centreavec.be> (dernière consultation le 28 juin 2010)

¹⁵ L. SAINT MOULIN (de), « leçon du premier tour de l'élection présidentielle en République Démocratique du Congo », in *Congo-Afrique*, n°408, octobre 2006, pp332-354

celui où l'on exerçait son droit de vote. Pour pallier ce manque de rigueur initiale, des dérogations ont, ensuite, été consenties assez facilement, sur base de l'article 59 de la loi électorale du 9 mars 2006. Une autre source de difficultés dans la maîtrise de la liste des électeurs était liée au fait que l'enrôlement a été réalisé par encodage sur support magnétique. La destruction accidentelle ou méchante de certains ordinateurs ou CD (compact disc) avait fait qu'il y avait eu des personnes détentrices d'une carte d'électeur dûment délivrée, mais ne figurant pas sur les listes du centre national de traitement. Pour ne pas les pénaliser le bureau de la CEI avait, par sa décision n°24 du 15 juillet 2006, autorisé ces électeurs à exercer leurs droits de vote dans d'autres centres¹⁶

ELECTIONS DES DEPUTES NATIONAUX DU 31 JUILLET 2006

Nombre des Bureaux de vote	211
Elections attendus	113489
Nombre de votants	97163
Taux de participation	85,61
Bulletin Nul	2300
Bulletins Blancs	448
Suffrages exprimés	94415

ONT REMPORTEES LA VICTOIRE

N°	Nom- Poste nom- Prénom	Voix obtenues	Partis Politiques
1	BUNDA BITENDWA Jeanne	18574	MAI- MAI
2	MUHIMA BINTU Sabina	18881	PPRD

ELECTIONS PROVINCIALES

Nombre de BDV fonctionnels	211
Nombre de BDV compilés	211
Electeurs attendus	113.489
Votants	93.079
Taux de participation	85,61%
Nuls	2.173
Bulletins blancs	978
Suffrages exprimés	89.928

LES GAGNANTS

N°	Nom-Post nom-Prénom	Voix obtenues	Paris politiques
1	BWIRA SHEMUSIMWA Manassé	12.589	MSR
2	KALINDA KAHOMBO Gilbert	14.798	PPRD

Ces résultats ci-haut présentés ne correspondent pas exactement aux volontés du peuple Walikalien, car certains membres du Gouvernement (candidat de l'AMP surtout) ont usé de leur influence, par le biais de l'armée, de la police, des médias ou des finances publiques pour manipuler le processus électoral, dans la mesure où ces derniers se sont permis de remettre aux forces armées des billets de dollars et de la boisson pour qu'ils votent pour eux ; et pourtant elles n'auront donné la preuve, à la date limite du dépôt des candidats, de leur démission acceptée ou de leur mise à la retraite.¹⁷

¹⁶ L. SAINT MOULIN (de), « analyse des résultats du second tour de l'élection présidentielle en République Démocratique du Congo », in *Congo Afrique*, n°411, janvier 2007, pp37-54

¹⁷ Loi électorale déjà citée, Chapitre II, Article 10, p.11.

En outre, tous les candidats sur la liste du PPRD au premier tour des élections et ceux de l'AMP au deuxième tour avaient battu campagne à la victoire de l'initiateur du PPRD Joseph KABILA KABANGE, en s'inscrivant dans la vision et programme ayant pour thème unique « les cinq chantiers pour changer le Congo » une vision et programme dont les mots maîtres sont modernisation, renouvellement, renaissance, plutôt que « point à temps », réhabilitation ou raccomodage¹⁸.

En outre, l'identification des compétiteurs politiques congolais à Dieu ou mieux à l'église (le cas de MUHIMA BINTU Sabina) également manifesté chez J. KABILA KABANGE. En effet, le 28 juin 2006, lors de son adresse à la population de Goma le président de la République et candidat à sa propre succession, s'était exprimé en Swahili, promettant à la population le courant électrique avec l'envoi imminent des groupes thermiques à Walikale devant produire de l'énergie électrique et par ricochet permettre à la REGIDESO de desservir de l'eau à toute la population du territoire de Walikale avant la tenue des élections le 30 juin 2006. Pour assurer la population de cette promesse, il s'était présenté comme un enfant de Dieu en disant en swahili « Mimi ni mtoto wa mungu siwezi sema uwongo » c'est-à-dire « moi je suis l'enfant de Dieu, je ne peux pas vous mentir » cette référence ou mieux l'identification des hommes politiques à Dieu a fait dire à G. de VILLERS et J. OMASOMBO que « tenir compte de la religion n'est pas une question de principe, mais de pragmatisme, c'est un moyen soit de se faire élire ou réélire¹⁹ ».

De plus, ces mêmes candidats membres du gouvernement se sont servis des finances publiques de l'Etat pour battre campagne ; or est interdite, l'utilisation à des fins de propagande électorale des biens, des finances et du personnel de l'Etat, des Entreprises, Etablissements et Organismes Publics et des Sociétés d'économie mixte.

L'utilisation des biens, des finances et du personnel public visés ci dessus est punie de radiation de la candidature ou de l'annulation de la liste du parti politique, de regroupement politique ou des indépendants qui s'en rendent coupables ou dont le candidat s'en rend coupable²⁰.

3 LE DEBAT SUR LA TRANSPARENCE OU NON DES ELECTIONS ORGANISEES EN 2006 A WALIKALE

Les élections transparentes sont communément appelées « Elections propres » lorsqu'un peuple aguerri et persévérant refuse de se laisser tromper. Au Kenya, on a mis fin au régime d'Arap *MOI* en organisant des voies électorales. C'est encore le président de la commission électorale qui, en se fondant sur l'éthique et la déontologie, a remis un doute sur le succès électoral du président KIBAKI, ce qui a donné la force au pari de l'opposition et à la population qui sont descendus dans la rue pour protester. Cela diffère de la complaisance dans laquelle se trouve nombre d'hommes politiques de notre pays qui n'ont pour la plupart qu'un seul souci ; accéder au pouvoir et jouir de ce pouvoir²¹. Par ailleurs, les élections véritables supposent que des listes électorales aient été soigneusement élaborées. Elles supposent que la population veille à ce que toute fraude soit évitée. Les urnes transparentes, sous surveillance constante afin d'éviter des substitutions. La population doit être présentée par ses représentants aux procédures de comptage et de vérification des résultats. Ceux-ci doivent être sanctionnés par la cour suprême de justice²².

Cependant, dans le territoire de Walikale, certains individus votaient sans avoir raison, c'est notamment le cas de INTERAHAMWE dans les groupements cités précédemment, qui n'avaient pas la qualité d'électeur qui est constatée par l'inscription sur la liste des électeurs et la détention d'une carte d'électeur délivrée par la commission électorale indépendante²³. Toujours dans ce cadre de la tricherie, ils ont provoqué intentionnellement l'absence des témoins des autres partis politiques ruraux de ne pas participer aux opérations de comptage et de dépouillement ; bien que chaque parti

¹⁸ A. LUMANU MULENDA BWANA N'SEFU « construire la Nation, étape après étape ! » in J. KABILA KABANGE, *l'état de la Nation 2007, 2008, 2009, éditions de la presse présidentielle, Kinshasa, 2010, p.9*

¹⁹ A. MAINDO MONGA NGONGA, *l'Etat à l'épreuve de la guerre : violence et configuration des pouvoirs en RDC, Thèse de Doctorat en science politique, Université Paris 1 Panthéon-Sorbonne, Mars 2004, p.75*

²⁰ *Loi électorale déjà citée, Chapitre III, Article 35, p.12*

²¹ FWELLY DIANGITUKWA, *Les fraudes électorales : comment on colonise la RDC, Paris, Harmattan, 2008, p.6*

²² Pierre de QUIRINI, *Comment bâtir la démocratie. Le peuple est le premier artisan de la démocratie. Il faut le rendre capable d'y collaborer, Imprimerie du CEP, Kinshasa, 1992, p.57.*

²³ *Loi électorale déjà citée, titre II, article 6, p. 11*

politique ou regroupement politique, chaque candidat indépendant ait le droit de désigner un témoin et de son suppléant pour suivre les opérations électorales dans un bureau de vote et de dépouillement déterminé²⁴.

C'est avec joie que la population de Walikale a grandement salué la venue des élections ; car dit-elle « ces dernières vont classer valablement les modalités de passation de pouvoir. Elles vont permettre ultérieurement de remplacer un peuple, longuement enseveli, pillé, meurtri dans une société juste et fraternelle où le droit de l'homme est acceptable ». Pour répondre à la question posée au niveau de la problématique, cela soulève une argumentation intellectuellement affirmative et négative même si on ne peut pas affirmer une chose et son contraire au même moment.

Parler de la transparence pour les élections de 2006 organisées en territoire de Wamikale, suscite des doutes dans plusieurs personnes car force est de dire qu'il y a eu une transparence vernie parce que dans les coulisses, la politique s'opérait autrement dans la mesure où on votait pour certaines gens qui ne savent ni lire ni écrire, en mentionnant sur les bulletins de vote les noms des candidats qui n'étaient pas de leur choix. De plus, on remettait à certaines personnes analphabètes des bouts de papiers sur lesquels on écrivait des noms des candidats qu'il fallait voter sans leur consentement ; ceci se passait à côté des urnes.

De toutes les façons, plusieurs cas d'irrégularités ont été constatés : des hachures des cases par empreinte digitale, des soufflements des noms, des agressions physiques et verbales, des paroles blessantes, des mensonges grossiers... ont été trop souvent la règle. Ceci prouve à suffisance que les élections dans cette partie du pays n'étaient qu'un trompe-œil, elles étaient démocratiques de forme, c'est-à-dire miroitées de faux noms. Et la plupart des candidats qui ont monté toutes ces stratégies électorales frauduleuses étaient majoritairement membres de l'AMP, personnalités au pouvoir ; ceux de l'Union pour la Nation, non. A partir de leur richesse, ils ont été en mesure de corrompre la population en argent, t-shirt, du sel, produits pharmaceutiques, ... raison pour laquelle, les Walikaliens et les Walikaliennes ont donné leur quitus au chef de l'Etat et à d'autres membres de l'AMP au niveau national et provincial.

Cette situation ci-haut soulevée a poussé à dire qu'en Afrique, on vote chaque année sans que les élections ne débouchent sur la consolidation de la démocratie. Les élections sont généralement truquées et la fraude électorale est la norme fondamentale. Personne n'est prêt à reconnaître sa défaite aux élections. Les perdants ont du mal à accepter leur défaite et recourent souvent aux armes tandis que les gagnants qui n'ont souvent aucun respect pour eux, tendent à les écraser, au besoin par la force des armes. Le droit de vote est souvent dénié à certaines fractions de la population et les conditions d'éligibilité sont très floues. Les opposants politiques sont considérés comme des ennemis à abattre et non comme adversaire. Les médias publics sont généralement partisans et confisqués par les hommes du pouvoir.

L'administration, l'armée, la force de police et de sécurité sont loin d'être neutres et se tiennent prêtes à soutenir des hommes au pouvoir qui sont de plus souvent candidat à leur propre succession dans un univers où le principe est qu'un président en fonction ne peut que par les élections, organiser son propre gouvernement et se cramponner au pouvoir. La justice elle-même, à la solde des hommes du pouvoir n'hésite pas à homologuer les résultats électoraux frauduleux. Les élections pourtant généralement conçues comme un mécanisme de résolution des problèmes et de sortie de crises politiques deviennent elles-mêmes un nouveau problème majeur et tendent à aggraver les crises politiques préexistantes. Elles créent souvent des problèmes qu'elles ne résolvent²⁵.

Par conséquent, du fait que les élections organisées en territoire de Walikale n'ont pas été bonnes, elles avaient plutôt une visée, n'ont pas pour sortir le peuple de la misère dans laquelle il était plongé, mais pour contrôler ensuite facilement l'économie du pays dans cette partie, quel que soit la présence des observateurs étrangers sur ce sol, qui n'observent ce qu'on leur a demandé de faire, ils ne sont pas animés par l'éthique ou par la morale²⁶. Toutefois, il n'est pas étonnant de constater cela dans ce milieu car il n'y a jamais eu d'élection parfaite au monde.

²⁴ *Idem, Chapitre VI, Article 38, p.12*

²⁵ André Mbata B MANGU, « Élection de Barak OBAMA comme 44^{ème} Président des Etats Unis : leçon pour l'Afrique et pour le monde » ; in *Congo-Afrique, N°431, Janvier 2009, p.7.*

²⁶ FWELEY DIANGITUKWA, *Op. Cit. p.1*

Néanmoins, le succès des élections est la victoire qui ne permet pas d'avoir une fraude massive ou systématique en faveur des candidats, plus encore que celle de la commission électorale indépendante. Il ouvre la voie d'une véritable démocratisation²⁷.

4 CONCLUSION

Au terme de notre analyse sur l'organisation des élections pluralistes, libres, démocratiques de 2006 en territoire de WALIKALE, force est de dire qu'elles n'étaient pas transparents, car caractérisées par la fraude, manque de liberté et de la transparence ne débouchant pas nécessairement sur la consolidation de la démocratie et de la paix ; et pourtant, elles constituent des événements constructifs d'une démocratie. Les résultats de notre travail démontrent que ceux qui ont gagné étaient majoritaires des personnalités au pouvoir, membres de l'AMP ; aucun député du regroupement de l'opposition politique.

Au niveau présidentiel, c'était le Président Joseph KABILA KABANGE, membre du PPRD.

Au niveau national, deux sièges dont l'un à Jeanne BUNDA BITENDWA, de MAÏ-MAÏ, l'autre à MUHIMA BINTU Sabina de PPRD. Donc toutes les deux

Au niveau provincial, deux sièges, dont BWIRA SHEMUSIMWA Manassé, de MSR, et l'autre siège à KALINDA KAHOMBO Gilbert, de PPRD ; les deux de regroupement politique de l'alliance pour la majorité présidentielle.

Avec la présente étude, les décideurs politiques nationaux et internationaux sont plus informés sur les manœuvres frauduleuses lors de l'organisation des élections pluralistes dans un pays qui se veut démocratique pendant que celles au niveau de collectivités, territoires, villes, communes non encore organisées constituent la première étape de la mise en œuvre de la loi sur la décentralisation en marche au Congo-Kinshasa.

²⁷ Léon de Saint Moulin, « Analyse des résultats du second tour de l'élection présidentielle en RDC », in Congo-Afrique, N°411, Janvier 2007, p.48

REFERENCES

- [1] A. LUMANU MULENDA BWANA N'SEFU « construire la Nation, étape après étape ! » in J. KABILA KABANGE, l'état de la Nation 2007, 2008, 2009, éditions de la presse présidentielle, Kinshasa, 2010
- [2] A. MAINDO MONGA NGIONGA, *L'Etat à l'épreuve de la guerre : violence et configuration des pouvoirs en RDC*, Thèse de Doctorat en sciences politique, Université Paris 1 Panthéon-Sorbonne, Mars 2004
- [3] DEBBASCH et Al, *Lexique de politique*, 7^{ème} édition, Dalloz, Paris, 2001
- [4] E. MPONGO-BOKOKO BAUTOLINGA, *Institutions Politiques et droit constitutionnel, Tome 1, Théories générales des institutions politiques de l'Etat*, Editions universitaires Africaines, Kinshasa, 2001
- [5] Fondation KONRAD ADENAUER, *Le processus électoral 2006 en RDC perception de la population*, Faculté Catholique, Kinshasa, 2008
- [6] FWELEY DINGITUKWA, *Les fraudes électorales : comment on colonise la RDC*, Paris, Harmattan, 2008
- [7] L. SAINT MOULIN (de), « analyse des résultats du second tour de l'élection présidentielle en République Démocratique du Congo », in *Congo-Afrique*, n°411, janvier 2007, pp. 37-54
- [8] L. SAINT MOULIN (de), « Leçon du premier tour de l'élection présidentielle en République Démocratique du Congo », in *Congo-Afrique*, n°408, octobre 2006, pp. 332-354
- [9] L. SAINT MOULIN (de), « RDC, les principaux défis de l'après élection » in *Centreavec*, Bruxelles, juin 2006, pp.1-7 ; document d'analyse et de réflexion disponible sur <http://www.Centreavec.be> (dernière consultation le 28 juin 2010)
- [10] La constitution de la République Démocratique du Congo du 26 Mars 2006
- [11] La Loi électorale N°06/006 du 9 Mars 2006 portant organisation des élections Présidentielle, Législatives, Provinciales, Urbaines, Municipales et Locales
- [12] P. MILUMBATI NGASHA, *Sociologie politique*, édition Africa, Lubumbashi, 1988
- [13] P. NGOMA-BINDA, *La participation politique. éthique civique et politique pour une culture de paix, de démocratie et de bonne gouvernance*, deuxième édition, revue et augmentée, institut de formation et d'études politiques, Kinshasa, 2005, pp.484-491
- [14] Pierre de QUIRINI, *Comment bâtir la démocratie. Le peuple est le premier artisan de la démocratie. Il faut le rendre capable d'y collaborer*, Imprimer du CEP, Kinshasa, 1992
- [15] Rapport spécial du secrétaire général au conseil de sécurité sur les élections en RDC.

La valorisation des produits du terroir: enjeux et perspectives

[The valuation of local products: challenges and perspectives]

Soumia OMARI

¹Professeur à l'École Nationale de Commerce et de Gestion, UNIVERSITE HASSAN II DE CASABLANCA, Maroc

²Membre du Laboratoire de Recherches et d'Analyses en Marketing, Management et Stratégies des Organisations, Maroc

³Membre du Réseau International de Recherche sur les Organisations et le Développement Durable (RIODD), Maroc

Copyright © 2016 ISSR Journals. This is an open access article distributed under the *Creative Commons Attribution License*, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: In the globalization of the economy, we notice a high demand of the local products on the word. These products serving not only to bring to the consumer the authenticity which he demands, but to assure a sanitary quality in a local environment. Conscious of these challenges, Morocco fixed as mission to value its local products in the objective to assure a socioeconomic development of the partners and to get the main part of the value added in these regions and to encourage the ecotourism.

KEYWORDS: local products, sustainable development, globalization, ecotourism, the quality.

RESUME: Dans le cadre de la mondialisation de l'économie, on constate une forte demande sur les produits du terroir à l'échelle internationale. Ces produits servant non seulement à apporter au consommateur l'authenticité qu'il réclame, mais à assurer une qualité sanitaire dans un environnement local. Conscient de ces enjeux, le Maroc fixe comme mission de valoriser ses produits de terroir dans l'objectif d'assurer un développement socio-économique des compagnes et de capter l'essentiel de la valeur ajoutée dans ces régions et encourager l'écotourisme.

MOTS-CLEFS: les produits du terroir, le développement durable, la mondialisation, écotourisme, la qualité.

1 INTRODUCTION

La mondialisation des échanges, la concentration des firmes et la croissance des disparités et des inégalités entre les classes sociales ont mené à des résultats néfastes sur la situation socio-économique de la population exclue surtout dans les zones rurales. Pour parvenir à résoudre ces problèmes, en particulier dans les zones rurales il est important de prendre certaines mesures comme la valorisation des ressources locales à savoir les produits du terroir. En effet, les produits du terroir permettent de répondre aux attentes des consommateurs. Ces produits jouent un rôle dans la lutte contre la banalisation des goûts et dans le développement local et durable de notre planète. D'une part, ils sont au centre des préoccupations des consommateurs surtout ceux qui cherchent l'authenticité, l'originalité et la sécurité alimentaire. D'autre part, ils ont permis aux producteurs de mettre en valeur leur produit, de profiter de sa notoriété et de préserver le maximum de la valeur ajoutée. Il s'agit d'un partenariat (gagnant – gagnant) entre le consommateur et les producteurs [1].

La première partie sera focalisée sur le concept du terroir et du produit du terroir. La deuxième partie est une étude sur les enjeux des produits du terroir. La troisième partie introduira les spécificités des produits du terroir au Maroc et le rôle du plan du Maroc vert dans la promotion de ces produits.

2 DE LA NOTION DU TERROIR AUX PRODUITS DE TERROIR

La notion du terroir est très ancienne en France car elle date du 12^{ème} siècle. Elle dérive du mot latin terra (terre). Le mot d'abord eut le sens strict d'un ensemble de terres cultivé par une communauté villageoise [2]. Mais son lien avec les produits agricoles est récent, c'est au 20^{ème} siècle que son utilisation s'est étendue et s'est particulièrement affirmée dans les territoires ruraux où des productions agricoles ont développé des appellations d'origine contrôlée (AOC) [3]. Le terme « terroir » est polysémique et varie selon la discipline scientifique qui l'utilise : (science de la vie et de la terre, agronomie, ethnologie). Si ce terme de terroir a été utilisé pour différents sens, il est actuellement stable défini par les chercheurs et les professionnels agricoles français, (définition reprise par l'UNESCO) comme : *«un espace géographique délimité définit à partir d'une communauté humaine qui construit au cours de son histoire un ensemble de traits culturels distinctifs, de savoirs et de pratiques, fondés sur un système d'interactions entre le milieu naturel et les facteurs humains. Les savoir-faire mis en jeu révèlent une originalité, confèrent une typicité et permettent une reconnaissance pour les produits ou services originaires de cet espace et donc pour les hommes qui y vivent. Les terroirs sont des espaces vivants et innovants qui ne peuvent être assimilés à la seule tradition»* [4]. A partir de cette définition le terme de terroir est une aire géographique et un espace humain caractérisé par une culture, un savoir-faire et une histoire. Dans ce même sens, l'INAO associe la notion de terroir à une étendue géographique caractérisée par des conditions pédo-climatiques spécifiques et des pratiques traditionnelles anciennes [5]. Le terroir est un espace géographique limité et déterminé par des savoir-faire et des pratiques traditionnelles et qui sont transmis de génération en génération. Ces pratiques sont authentiques et spécifiques. Le terroir est, en effet, caractérisé par une histoire et une culture propre. Cela signifie que dans le même espace, avec les mêmes potentialités physiques et des sociétés distinctes on aura des terroirs différents.

Les produits issus de terroir sont définis par le groupe de travail sur les appellations réservées et les produits du terroir comme suit [6]:

- Produit qui provient ou dont les principales composantes proviennent d'un territoire délimité et homogène et dont les caractéristiques qui le distinguent de façon significative des produits de même nature reposent sur la spécificité de ce terroir.
- Ses caractéristiques dépendent à la fois des particularités du milieu, comme la géologie, le climat ou le relief, de savoir-faire ainsi que les savoirs traditionnels ou émergents
- Le producteur doit garder un contrôle sur toutes les étapes de production, de transformation et de mise en marché.

Ces produits sont caractérisés par leur lien à un territoire limité et homogène, ce qui les rend différents des autres produits de même nature. En plus, ces produits du terroir sont le fruit d'un savoir-faire traditionnel. Ils sont donc le produit d'interaction entre la nature et la culture. Cependant la fonction du producteur ne se limite pas dans la maîtrise du processus de production et de transformation, mais s'étend à la commercialisation de ces produits. Par ailleurs, grâce à ces producteurs surtout ceux qui ont gardé les savoirs traditionnels, les produits du terroir ont été conservés. Cependant, on ne peut pas dire que ces produits sont stables et traditionnels. Au contraire, ils évoluent. Donc, les produits du terroir sont caractérisés par une dynamique innovante qui évolue en fonction de la science, la technologie et la culture.

3 LES ENJEUX DES PRODUITS DU TERROIR

Les productions agricoles et alimentaires du terroir font partie prenante de toutes les grandes questions qui se posent aujourd'hui, et se trouvent au cœur d'enjeux de tous ordres [7]. Après les produits biologiques, les produits du terroir sont actuellement au cœur de la préoccupation des collectivités locales qui sont à la recherche d'une identité. L'authenticité, la tradition et l'originalité de ces produits du terroir sont utilisées comme arguments pour transmettre une image attractive de la région où ils sont issus. En plus, ces produits du terroir ont un rôle déterminant dans le développement durable rural. Ils entraînent une valorisation des produits sur le plan économique, et protègent l'environnement en assurant des emplois stables sûrs qui améliorent le niveau de vie de la société locale. Afin d'atteindre ces objectifs, il est nécessaire d'avoir une connaissance sur les agriculteurs, les espaces géographiques dans lesquels travaillent ces agriculteurs, ainsi sur leurs pratiques et leurs savoirs traditionnels. En revanche, les produits du terroir sont confrontés à une série d'enjeux économiques, culturels, biologiques, développement durable et du tourisme durable dans le monde rural.

3.1 L'ENJEU ÉCONOMIQUE

Les produits du terroir sont plus protégés dans le marché grâce au label et aux appellations. Ces appellations autour des indications géographiques sont un moyen de promotion de ces produits. Les produits du terroir permettent de valoriser les savoir-faire traditionnels, ils se distinguent par leurs origines et leurs identités et ils sont caractérisés par :

- La typicité : Ces produits sont authentiques dans leurs constitutions et dans les procédures de leurs productions et transformations.
- La qualité : Surtout en respectant les normes des cahiers de charges, de la sécurité alimentaire et de la traçabilité. Selon le F.A.O la qualité des produits du terroir dépend de trois conditions préalables [8]:
 - **Le produit** : il doit présenter des caractéristiques uniques liées à son origine, qui lui confèrent sa qualité spécifique et sa réputation sur le marché, et qui correspondent à une demande de consommateurs ;
 - **Le territoire** : les caractéristiques spécifiques sont le résultat de la combinaison des ressources naturelles et humaines ancrées au lieu de production ;
 - **Les acteurs locaux** : les producteurs, qui ont hérité de traditions et d'un savoir-faire, aux côtés d'autres acteurs concernés, sont conscients de leur patrimoine et sont motivés pour développer une démarche collective de préservation et de valorisation du produit.

Ces deux caractéristiques à savoir la typicité et la qualité sont des outils de différenciation de ces produits du terroir ce qui leur confère une valeur importante. Il faut mentionner ici que la valeur ajoutée sera plus satisfaisante si la transformation de ces produits du terroir s'effectue au niveau local, cela permettra aux producteurs locaux une rémunération satisfaisante.

3.2 L'ENJEU CULTUREL ET BIOLOGIQUE

Les produits du terroir sont porteurs d'une diversité culturelle à savoir l'histoire individuelle et collective, les coutumes ancestrales, les savoir-faire traditionnels qui distinguent chaque terroir et permet d'identifier les uns par rapport aux autres. Les produits du terroir reposent donc sur la façon dont ils sont élaborés, les savoirs et pratiques mis en œuvre, ces techniques qui ont des liens avec la culture sont un fondement de leurs spécificités [9]. En effet, ces savoir-faire sont de plus en plus considérés comme des objets de conservation, des éléments de patrimoine à sauvegarder, à mettre en valeur et à innover [10]. L'intérêt porté aux savoir-faire peut aussi être expliqué par le fait que la valorisation des produits locaux à travers une procédure de qualité permet de conserver des emplois ruraux et met en valeur des compétences locales. Ces savoir-faire incitent à attribuer à ces systèmes de production des produits du terroir une dimension culturelle, patrimoniale ou touristique [11].

Les terroirs sont aussi caractérisés par une diversité biologique et sont valorisés par les savoir-faire. L'enjeu du terroir est que ces savoir-faire conservent les sols contre l'érosion, les inondations et la sécheresse. En effet, le défi de terroir est double, il s'agit, en premier lieu, d'assurer l'alimentation à la population locale et de lui assurer des revenus en commercialisant ces produits. Cela implique une labellisation qui rende ces produits du terroir authentiques, originaux et typiques. En second lieu, de minimiser les risques à travers la maîtrise de la gestion de l'eau et la diversification des cultures.

3.3 L'ENJEU DE DÉVELOPPEMENT DURABLE

La Commission française du développement durable a défini le terroir comme *une entité territoriale dont les valeurs patrimoniales sont les fruits de relations complexes et de longue durée entre des caractéristiques culturelles, sociales, écologiques et économiques. À l'opposé des espaces naturels où l'influence humaine est faible, les terroirs dépendent d'une relation particulière entre les sociétés humaines et leur habitat naturel qui a façonné le paysage. Considérés d'un point de vue mondial, ils préservent la biodiversité, les diversités sociales et culturelles, en conformité avec les objectifs de développement durable* [12]. Le développement durable est donc l'enjeu principal des produits du terroir. Au niveau économique, comme il a été évoqué, la valorisation des produits du terroir peut être réalisée grâce à la reconnaissance et la labellisation de ces produits ce qui permettra de les commercialiser à l'échelle nationale et internationale.

Sur le plan social et culturel la diversité de ces produits demeure un atout pour le développement de la région. En plus, il est important d'encourager la transformation et le conditionnement local de ces produits. Cette démarche contribuera au développement local par :

- La création des emplois dans le domaine de la transformation des produits du terroir.
- Amélioration du niveau de vie des producteurs locaux, puisque ces derniers gardent le maximum de la valeur ajoutée.
- Stabilisation des populations rurales dans leurs régions, la diminution de l'exode rural et la réduction de la pauvreté.
- Développement des activités liées aux produits du terroir comme le tourisme rural.

Enfin, concernant le pilier environnemental, on ne peut pas assurer une continuité de ces produits sans penser à la protection et la gestion durable des ressources naturelles.

3.4 L'ENJEU DU TOURISME DURABLE

Le tourisme durable est défini comme [13] : « *un tourisme qui tient pleinement compte de ses impacts économiques, sociaux et environnementaux actuels et futurs, en répondant aux besoins des visiteurs, des professionnels, de l'environnement et des communautés d'accueil.* ». Le tourisme durable est lié à la notion du développement durable qui intègre à la fois les objectifs sociaux et environnementaux [14]. Il est considéré comme une petite niche de marché en croissance constante. Malgré la crise économique, les consommateurs sont conscients de l'importance de préserver l'environnement [15]. Contrairement au tourisme de masse, ce type de tourisme alternatif vise à protéger le patrimoine naturel, culturel et social et à assurer la durabilité de la ressource au profit des collectivités fragilisées par l'industrie touristique de masse et non pas à leurs dépens [16]. Selon les nations unies le tourisme durable doit [17]:

- exploiter de façon optimum les ressources de l'environnement qui constituent un élément-clé de la mise en valeur touristique, en préservant les processus écologiques essentiels et en aidant à sauvegarder les ressources naturelles et la biodiversité ;
- respecter l'authenticité socioculturelle des communautés d'accueil, conserver leurs atouts culturels bâtis et vivants et leurs valeurs traditionnelles et contribuer à l'entente et à la tolérance interculturelles ;
- assurer une activité économique viable sur le long terme offrant à toutes les parties prenantes des avantages socioéconomiques équitablement répartis, notamment des emplois stables, des possibilités de bénéfice et des services sociaux pour les communautés d'accueil, et contribuant ainsi à la réduction de la pauvreté.

Dans le but de valoriser le tourisme durable dans les zones rurales il est indispensable de promouvoir ces produits du terroir. Le défi des produits du terroir est donc de mettre en évidence l'identité et l'authenticité de ces produits dans le discours touristique. Cependant, ces produits doivent être compétitifs au niveau du rapport qualité-prix. En plus, il faut prévoir des visites au profit des touristes au lieu de la production et de la transformation de ces produits. Dans ce cadre, on peut parler de l'agrotourisme qui est une forme de tourisme rural. Ce concept englobe les activités touristiques en lien avec l'exploitation agricole, qu'elles soient pratiquées sur l'exploitation, ou qu'elles utilisent une composante agricole de l'exploitation [18].

Les composantes de l'agrotourisme sont le producteur et ses produits, leur transformation et leur vente, ainsi que les activités qui peuvent s'y greffer. Il est donc, constitué de visites et d'activités qui s'effectuent dans un environnement agricole et qui sont animées par des agriculteurs et autres travailleurs du terroir [19].

4 LES PRODUITS DU TERROIR AU MAROC : CONTEXTE ET ENJEUX

La diversité des paysages du Maroc s'étalent : oasis, montagne, littoral et désert a fait qu'il est classé deuxième pays méditerranéen riche en biodiversité [20]. Cette richesse naturelle explique la variété des produits du terroir et leurs typicités. Ces produits du terroir ont permis à ces régions, qui sont considérées toutefois comme marginales et difficiles, à se positionner avec succès dans les marchés. Cependant, les régions des montagnes et des oasis au Maroc souffrent de certaines contraintes physiques, sociales et climatiques. Ces contraintes sont celles de la sécurité alimentaire, de l'érosion et de la désertification, du changement climatique, de la pauvreté, de l'analphabétisme et de la sauvegarde de la diversité biologique et culturelle [21]. L'objectif du plan du Maroc vert est d'instaurer dans ces régions une agriculture sociale, ce plan repose sur deux piliers. Le premier pilier porte sur la valorisation d'agriculture moderne et compétitive, à travers la concrétisation des projets à forte valeur ajoutée et de haute productivité tant pour les productions agricoles que pour les industries agroalimentaires, répondant aux exigences du marché en s'appuyant sur les investissements privés. Le second vise un développement solidaire de la petite agriculture à travers la réalisation de 545 projets d'intensification et de professionnalisation des petites exploitations agricoles ce qui réduira la pauvreté et l'exode rural [22]. A ce propos, la valorisation des produits du terroir répond au second pilier du plan vert en créant des emplois et en engendrant la valeur ajoutée en faveur des petits agriculteurs ce qui leur permet un meilleur accès aux marchés (locaux, nationaux et internationaux). Cela explique l'ambition du Maroc de créer un million d'entreprises agricoles qui succède au défi d'un million d'hectares cultivés qui a marqué la politique agricole depuis l'indépendance [23]. Il s'agit en particulier du deuxième pilier du plan du Maroc vert qui concerne principalement l'accompagnement solidaire de la petite agriculture, la promotion des zones difficiles (montagnes, oasis, régions semi-arides) à travers la valorisation de ces produits du terroir tout en assurant une gestion durable des ressources naturelles et biologiques. Dans ce cadre, le 2^{ème} pilier a pour finalité d'améliorer durant ces 10 années le revenu de 500 à 600000 exploitations et précisément celles des régions les plus pauvres [24]. Le défi est de

promouvoir la commercialisation de ces produits à l'échelle nationale et internationale, de garder le maximum de la valeur ajoutée en faveur de la population locale et de stabiliser la population rurale. Pour parvenir à réaliser ces objectifs six axes d'action permettront de développer les produits du terroir [25] :

- La réalisation d'études, d'assistance technique et de conseils : études régionales d'identification des produits et d'élaboration de plans de développement, assistance technique pour l'adoption des bonnes pratiques agricoles et l'amélioration des processus de valorisation, conseils pour la mise à niveau des unités de production et de valorisation.
- Le lancement d'un programme de recherche et de développement pour élaborer des fiches technico-économiques et accompagner les porteurs de projets
- L'appui direct aux initiatives locales menées par les groupements d'agriculteurs.
- L'appui à la commercialisation (études, développement de partenariats pour l'accès au marché, soutien au transport).
- L'organisation et la promotion du secteur : appui à l'organisation des acteurs du secteur, organisation des séminaires, foires, forums et manifestations, conclusion de partenariats institutionnels pour la promotion et le financement du secteur.
- La contribution au développement durable du secteur, renforcement des capacités des intervenants du secteur, actions pour la préservation des ressources naturelles et la protection de l'environnement, programme de sensibilisation de la société civile.

5 CONCLUSION

Les produits du terroir sont aujourd'hui l'objet d'enjeux économiques, sociaux et environnementaux et par conséquent, ils jouent un rôle dans le développement local et durable de notre planète. Ces produits issus de traditions et des valeurs patrimoniales relèvent de savoir-faire traditionnels propres aux régions d'où ils proviennent. Les produits du terroir sont donc les supports d'un développement viable, localisé et ouvert sur le monde, qui s'inscrit dans une perspective de durabilité. Dans cette perspective, le Maroc accorde une importance à ces produits du terroir. Ceux-ci sont un gage du développement rural durable. On peut constater cette nouvelle tendance dans « le plan du Maroc vert » lancé en 2008. Actuellement, le Maroc dispose d'une diversité et d'une richesse des produits du terroir dans ses montagnes et ses oasis et qui sont caractérisés par leur qualité et leur originalité. De plus, plusieurs coopératives spécialisées dans la production, la transformation et la commercialisation des produits du terroir ont été encouragées par l'état par des subventions financières et techniques. L'état par cette action vise d'une part la promotion et la commercialisation de ces produits du terroir en dehors les frontières nationales, d'autre part, à développer ces régions sur le plan économique, social et environnemental afin de stabiliser la population rurale et créer des emplois.

REFERENCES

- [1] Ministre d'agriculture et de pêche maritime, Cadre législatif marocain de reconnaissance et de protection des signes distinctifs d'origine et de qualité, Paris, juillet 2009.
- [2] F. Moinet, *Les produits fermiers : transformation et commercialisation*, Edition France Agricole, 320 p, 2002.
- [3] P. Prévost., P. Lallemand, « L'approche terroir: pour une démarche de recherche-formation-action », Conférence ISDA 2010 Innovation and Sustainable Development in Agriculture and Food, Cirad-Inra-SupAgro, Montpellier, France. <http://hal.archives-ouvertes.fr/hal-00512528/fr/>, 2010.
- [4] M T. Du Cros., A L. Vincent ., E. Barrand, « Le futur a besoin des terroirs», Rencontres Internationales Planète Terroirs UNESCO 2005, Terroirs et cultures, Paris, 10 novembre, 70 p, 2005.
- [5] F. Fort., J P. Couderc, « Le terroir : un avantage concurrentiel à l'exportation ? Le cas des entreprises agroalimentaire du Languedoc –Roussillon », *Economie rurale*, n° 264/265, juillet/octobre, pp. 46-59, 2001.
- [6] Solidarité rurale du Québec, *La mise en marché des produits du terroir. Défis et stratégies*, Solidarité rurale du Québec, coll. Études rurales, Nicolet, septembre, p 6, 2003.
- [7] L. Bérard ., P. Marchenay , « Lieux, temps et preuves la construction sociale des produits de terroir », *Revue terrain*, N°24, pp 153- 164, 1995.
- [8] E. Vandesandelaere, F. Arfini, G. Belletti, A. Marescotti, Territoires, produits et acteurs locaux : des liens de qualité, FAO, p 11, 2009.
- [9] B. Sylvander., F. Casabianca., F. Roncin, « Produits agricoles et alimentaires d'origine :enjeux et cquis Scientifiques », actes du colloque international de restitution des travaux de recherche sur les indications et appellations d'origine géographiques, 17 et 18 novembre , Paris, p 98, 2005.
- [10] L. Bérard, M. Cegarra, M. Djama, S. Louafi, P. Marchenay, B. Roussel, F. Verdeaux, « Savoirs et savoir-faire naturalistes locaux : l'originalité française », *Vertigo*, n°7, <http://vertigo.revues.org/2887>, 2005.

- [11] L. Bérard., P. Marchenay, B. Roussel., C. Delfosse, « Les produits du terroir : de la recherche à l'expertise », *Ethnologie française*, Vol 34, pp 591-600, 2004.
- [12] C. Brodhag, « Agriculture durable, terroirs et pratiques alimentaires », *Courrier de l'environnement de l'INRA*, n°40, juin, pp 33- 46, 2000.
- [13] Programme des Nations Unies pour l'environnement et Organisation mondiale du tourisme, 2006, vers un tourisme durable, Guide de l'usage des utilisateurs.
<http://www.unep.fr/shared/publications/pdf/DTIx0819xPA-TourismPolicyFR.pdf>
- [14] F. Vellas, « Les enjeux du tourisme durable dans les PED», In Logossah K, *Tourisme et développement durable : Actes du colloque CEREGMIA*, Schoelcher, 25-26septembre, Edition Publibook, pp 37-5, 2003.
- [15] E. Rouzet ., G. Seguin , *Marketing du tourisme durable*, Dunod, 208p ,2010.
- [16] S.Parent, JL. Klein, L. Jolin, « Le développement communautaire local et le tourisme communautaire : une analyse conceptuelle comparative », *Journal for communication studies*, Vol 2, n°4.
<http://essachess.com/index.php/jcs/search/titles?searchPage=3>, 2009
- [17] Définition Officielle Des Nations Unies, OMT. (2004), « Développement durable du tourisme Définition conceptuelle » (août 2004)
<http://www.veilleinfotourisme.fr/definition-du-tourisme-durable-definition-of-sustainable-tourism--28077.kjsp>
- [18] S. Graziani S, « L'agrotourisme, une autre manière de penser le développement durable territorial ?, » Le 1° congrès du RIODD : Organisations et développement durable : dialogues interdisciplinaires, 7 et 8 décembre, Creteil, Université Paris, 19 p, 2006
- [19] M A.Délisle., L. Jolin, *Un autre tourisme est-il possible ? Ethique, acteurs, concepts, contraintes, bonnes pratiques, ressources*, éditions presses de l'université du Québec, 144p, 2006.
- [20] Terroirs et origine : Leçon d'une lecture croisée des expériences du Maroc et de la France pour une méditerrané durable. Mai 2010. http://agriculture.gouv.fr/IMG/pdf/Terroirs_et_origine.pdf
- [21] A Akhannouch, 3 e forum international Chefchaouen, Maroc 2010,31 mai 2 juin
- [22] F. Ghriche, « plan Maroc vert », *Spécial vie économique*, n° 4507, 17 avril, p 3, 2009
- [23] Ministère d'agriculture du Développement Rural et des Pêches Maritimes, « Dossier la valorisation des produits de terroir, lignes d'action du pilier II du plan Maroc Vert », *Situation de l'Agriculture Marocaine (SAM)*, n°8, novembre, p 216, 2010
- [24] Ministère d'agriculture du Développement Rural et des Pêches Maritimes. « Dossier Développement solidaire de la petite agriculture : Pilier II du Plan Maroc Vert », *SAM*, n° 7, Avril, p 162, 2009
- [25] Conseil Général Du Développement (Maroc), Agricole, Conseil Général De L'alimentation, De L'agriculture Et Des Espaces Ruraux (France), 2010. Terroirs et origine : Leçon d'une lecture croisée des expériences du Maroc et de la France pour une méditerrané durable, Documentation Française, 88 p.

La dépression de la pande et le gisement de Gypse de Kapiri

[Depression of Pande and Kapiri Gypsum deposit]

Matete Milonguenu Augustin¹, Upite Mastaki Florry¹, J. Nsenga Ilunga¹, Lunda Ilunga², Kipata Mwabanwa Louis², Sangwa Kiteba Guellord¹, and Mbuyu Numbi Albert¹

¹Département de Géographie, Université de Lubumbashi, BP 1825, Lubumbashi, RD Congo

²Département de géologie, Faculté des sciences, Lubumbashi, RD Congo

Copyright © 2016 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: A geomorphologic analysis of Pande depression coupled to the gypsum deposit of Kapiri and the physico – chemistry analysis water samples and gypsum at right of site (on the Kapiri flat) has well shown that there is tight relationship within morphology of depression and his occurrence of gypsum. Hypothesis of the most plausible suggested into frame of this study that is, the occurrence gypsum of Kapiri don't result of deposit of rock salts in solution tonic minerals upper to depth. Moreover gypsum mass to herself is inadequate as tank for assuming the flow observed before the beginning of rains. Closes relatives and nest rock crystal observed at Kapiri have been developed in compressing and in distorting flakiness of enclosing shale.

Deposits constitute draught into topography of detail and introduce clearly as supply and those supplies must pursue up to now to in judge per quantities solvated in few time on storage areas outdoors. This overview is necessarily very sketchy because it is the result of oriented research especially in a practical way.

KEYWORDS: Depression, Geology, Geomorphology, gypsum deposit, Kapiri, Pande.

RESUME: Une analyse géomorphologique de la dépression de la Pande couplée à la géologie des gisements de gypse de Kapiri et de l'analyse physico-chimique des échantillons d'eau et de gypse au droit du site (sur le flat de Kapiri) montre bien qu'il existe une relation étroite entre la morphologie de la dépression et l'occurrence des gisements de gypse en son sein.

L'hypothèse la plus plausible proposée dans le cadre de cette étude est que, les occurrences gypsifères de Kapiri ne peuvent que résulter du dépôt des sels en solution dans des eaux minérales remontant de la profondeur.

D'ailleurs, la masse de gypse à elle seule est insuffisante comme réservoir pour assurer les débits observés avant le commencement des pluies. Les poches et les nids cristallins observés à Kapiri se sont développés en comprimant et en déformant le feuilletage des schistes encaissants. Les dépôts constituent des bourrelets dans la topographie de détail et se présentent nettement comme des apports. Et ces apports doivent se poursuivre jusque maintenant à en juger par les quantités dissoutes en peu de temps sur les aires de stockage à l'air libre.

Cet aperçu est forcément très sommaire car il résulte de recherches orientées surtout dans un sens pratique.

MOTS-CLEFS: Dépression, Géologie, Géomorphologie, Occurrences gypsifères, Kapiri, Pande.

1 INTRODUCTION

La problématique de la mise en place des occurrences de sulfate calcique dans le Périmètre minier de Kapiri dans la dépression de la Pande a été débattue entre plusieurs auteurs ; [1]. L'auteur décrit la texture particulière des micro-

psammites de la chipako en proposant une explication tectonique basée sur l'existence en cet endroit des failles radiale en relation avec le substratum. Deux ans plus tard [2] signale qu'un effort tectonique avait produit dans la dépression de la Pande un bombement, un chiffonnage et une fracturation des couches du Kundelungu. Il pense aussi que les gisements de gypse de Kapiri seraient probablement liés à la circulation dans la zone faillée, d'eau venant des profondeurs. [3]

L'auteur trouve également que la dépression de la Pande présente des apparences tectoniques, mais fait intervenir dans la morphogenèse l'influence des processus d'érosion par des agents climatiques. [4] M. Robert considère dépassée l'hypothèse tectonique et avance trois arguments dont l'un est à base stratigraphique ; à travers les niveaux repères représentés en haut du versant par les arkoses et sur le fond de la dépression par les grès de Lungéa (grès de Kiubo). Les buttes résiduelles présentant les mêmes faciès lithologiques que certaines parties du flanc encaissant de la dépression sont également un critère qui milite en faveur d'une origine morpho climatique. Et enfin, le ressaut de l'amont de Kapiri est structural. Ici, il faut admettre l'existence d'une flexure et un basculement des couches vers l'aval si l'on ne peut accepter la présence des failles radiales. Cela expliquerait dans une certaine mesure, le prolongement des couches du Kundelungu vers l'aval, cause probable de la dénivellation constatée.

Cependant, on ne peut minimiser l'intervention des efforts tectoniques dans la morphogenèse de cette région, lesquels efforts (épirogenèse positive ou bombement) auraient accrus l'efficacité des processus d'érosion par des agents climatiques. Ces efforts tectoniques se seraient manifestés lors de la formation des grandes failles (cassures) Africaines (telles que les failles de l'Upemba) et la pénéplanation [4].

A. François, 1970, qui a conduit le levé géologique de la région ne fait aucune allusion à l'existence des failles évoquées par [1], [2] Pour son hypothèse, il attribue quant à lui au gypse de Kapiri, une origine contemporaine aux formations encaissantes du Kundelungu. Il y aurait donc un dépôt de précipitation de gypse par évaporation des eaux de sources chargées des saumures. Ainsi le gypse de Kapiri dans le groupe du Kundelungu se serait déposé en marquant la fermeture du bassin katanguien. Nous proposons dans le cadre de cette étude une méthode d'approche pluridisciplinaire susceptible d'expliquer l'occurrence des gisements de gypse de kapiri.

1.1 SITUATION GÉOGRAPHIQUE

1.1.1 LOCALISATION

La dépression de la Pande se situe dans le district du Lualaba dans le Nord-ouest de la feuille de kambove en République Démocratique du Congo. Elle est orientée d'ouest en est sur une longueur d'environ 40 Km et une largeur de 8 à 12 Km.

Cette dépression entaille le haut plateau de Bianco par des versants raides, et occupe le cœur entre deux diverticules dont celle de Kisiba salabwe au Nord et celle de Kyankwale au sud. Il s'observe bien en partant du village Mutobo. C'est à cette dépression de la pande qu'appartient la localité de Kapiri qui fait l'objet de notre étude (figure1).

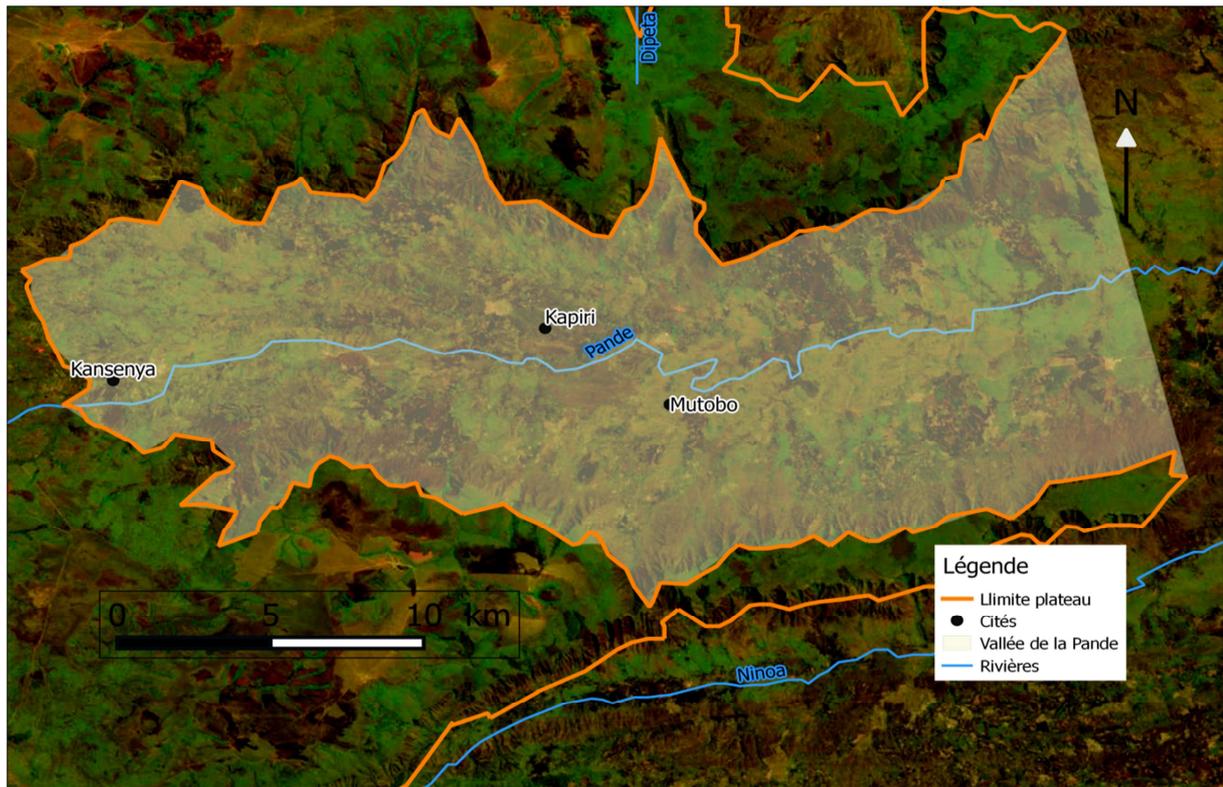


Fig. 1. Le relief de la PANDE

1.1.2 RELIEF

Le relief de la dépression de la pande peut être subdivisé en 3 unités à savoir :

- Les surfaces sommitales du plateau ;
- Les versants du plateau ;
- Le fond de la dépression ;

On y distingue les types de versants suivants :

- Versants à corniche au tracé rectiligne ;
- Versants à alvéoles ;
- Versants à balcons.

1.1.3 CLIMAT

La région de la Pande appartient au climat de savane avec une alternance des saisons sèches et humides. Elles sont sous l'influence des vents réguliers, les alizés du sud-est en provenance de l'océan indien qui de mai à octobre sont secs.

Elle reçoit également des vents locaux qui sont dus surtout à la disposition particulière du relief.

Les précipitations moyennes annuelles dans la dépression et sur le plateau sont souvent inférieures à 1200 mm. Cependant on peut y constater des valeurs de l'ordre de 1600 mm. La saison sèche y dure cinq mois et s'étend de mi-mai (ou fin avril) jusqu'en septembre.

La température moyenne annuelle est de $\pm 20^{\circ}\text{C}$.

1.1.4 HYDROGRAPHIE

Le réseau hydrographique de la vallée est drainé par la rivière Pande. La plupart des rivières et ruisseaux, coulent pendant la saison des pluies et sont sèches entre mai et octobre, ce qui fait que les débits varient en fonction des précipitations. Certains biefs des rivières plus ou moins important et même des ruisseaux parcourent la dépression en chute

à l'instar de la chute de Mulamba et des cascades dues surtout aux bancs de grès de Lungéa et surtout au fait que ces cours d'eau coulent en sens inverse du pendage des couches. D'autres bief sont calmes et les rivières y coulent en déposant des alluvions limoneuses qui constituent de la bonne terre arables c'est notamment le cas de la rivière Kaji sur le flat de Kapiri.

1.2 MÉTHODOLOGIE

Les considérations développées ici portent sur deux campagnes d'observations et d'échantillonnages d'eau et de sol (gypse et son encaissant) au cours de l'année 2012 respectivement au mois de février et au mois d'Août.

Nous avons retenu particulièrement pour l'analyse physico-chimique par absorption atomique, 10 échantillons de roche (sédiment, sol, roche) sélectionnés sur les 25 étudiés compte tenu de la ressemblance de faciès et du fait que nous n'avons qu'un seul minéral. Et pour le dosage classique 5 échantillons d'eau récoltés dans les rivières Kaji, Lunkusungwe, Pande et dans les puits foncés pour la prospection et pour la consommation domestique. Les débits ont été estimés par observations directes au niveau de la tête de source de la Lunkusungwe. Cette étude résulte d'observations faites à l'occasion de recherches dirigées surtout dans le sens pratique. Il ne s'agit donc pas d'une étude systématique.

L'établissement de l'esquisse géologique a été fait à l'aide d'un fond topographique.

Les indices rapportés de profondeur à la surface sont observables sur les taupinières.

2 RESULTATS ET INTERPRETATIONS

2.1 DONNEES GEOMORPHOLOGIQUES

La dépression de la PANDE d'une longueur supérieure à 40 Km, enserrée entre deux longs diverticules du haut plateau, le Kisiba Salabwe au nord et le Kyankwale au sud, pénètre jusqu'au cœur de Bianco. Allongé d'Ouest en Est ; elle s'ouvre vers la plaine de la Dikuluwe dans la zone effondrée de la Lufira. La pente de fond de la dépression n'est pas régulière. Les efforts tectoniques y ont produit un chiffonnage, un bombement et une fracturation des couches du Kundelungu. En amont de Kapiri, un ressaut de 75 m la subdivise en deux parties de formes différentes ; le palier amont, dans la partie la plus reculée (entrée de la rivière Pande) est fortement disséqué par la Pande et ses affluents, son altitude augmente de 1275 m à 1400 m sur une distance de 13 km (pente générale 2 %).

Le palier aval qui est plus long (une trentaine de Km) présente une surface plus unie : La pente longitudinale est plus faible (1 % déclivité de 1200 m à 1050 m). L'encaissement dans le plateau est ici de l'ordre de 500 m, alors qu'à hauteur de Kansenia il n'est plus que de 200 m [5]

Le ressaut de séparation est soutenu par un ensemble de bancs plus résistants : le niveau des grès de lungéa que la Pande entaille par surimposition en des gorges assez profondes tandis que son affluent la Chipako (conséquence) les franchit par une série de chutes et des cascades. A l'avant du ressaut, quelques collines résiduelles subsistent encore. Des versants élevés et raides au tracé d'ensemble subrectiligne, comporte une corniche, une pente forte et un glacis. Cette disposition est particulièrement bien représentée dans la partie aval de la dépression (palier inférieur) et ses abords septentrionaux (Nord du plateau de Kisiba salabwe).

Cette dépression renferme des gisements de gypse présentant un intérêt industriel ; ils sont probablement en relation avec la circulation, dans la zone faillée, d'eau venant des profondeurs.

L'étude des conditions structurales, topographiques, géologiques et hydrologiques locales permet-elle d'expliquer la présence des gisements de gypse dans cette vallée ?

2.2 DONNEES PHYSICO-CHIMIQUES

Les résultats d'analyse des éléments majeurs pour différents paramètres retenus pour les divers échantillons sont présentés dans les tableaux 1 et 2. Les résultats obtenus ont été soumis dans le cadre d'une autre étude au critère de sélection propre pour différencier les qualités du gypse trouvé à Kapiri et les domaines d'applications pour une prospective d'exploitation. Ici, ils nous renseignent sur les qualités physico-chimiques de l'eau et du gisement de gypse de Kapiri.

Tableau 1. RESULTAT DES ECHANTILLONS D'EAU

		PH	T°C	DT	DP	DC	Fe	Zn	SO ₄	CaO mg/l	MgO mg/l
1	Rivière Pande	7,24	18,6	22,4	11,0	11,4	48,19	11,27	0,00	0,00	0,11
2	Tête de source Rivière Lukusungwe	6,36	19,4	Trop dure	Trop dure	Trop dure	0,79	23,18	3,16	533,2	21,34
3	Puit creuser pour arrose	3,08	19,0	36,0	18,0	0,18	23,94	0,16	7,29	3,47	0,26
4	Eau consommé	7,28	19,2	30,0	16,0	14,0	0,04	0,00	0,00	83,26	2,18
5	Rivière Kaji et bas fond conf avec Riv Lukusungwe	7,63	19,6	26,0	13,0	13,0	46,13	0,33	0,00	33,92	0,11

Les résultats d'analyse physico-chimique des eaux nous permettent de relever le comportement suivant pour les différents éléments :

- Le PH varie de 3,08 à 7,63 ;
- La dureté totale de 22,4 à l'extrême ;
- Le Fe de 0,79 à 48 mg/l, le Zn de 0 à 23,18 mg/l ; le Co, le K, le Na et le Mn présentent des teneurs inférieures à l'unité
- Les sulfates(SO₄) de 0 à 7,29 mg/l
- L'oxyde calcique(CaO) de 0 à 533,2 mg/l
- La magnésie(MgO) de 0,1 à 21,34 mg/l

Tableau 2. RESULTATS DES ECHANTILLONS DE SOL

	PH	T°C	SiO ₂	FeO %	CaO %	MgO %	Co %	SO ₄ %
ECH 01/SOL. Carrière d'exploitation artisanale de Gypse	6,8	20,4	64,18	3,18	6,53	15,23	0,025	2,16
ECH 02/SOL. Ancienne carrière d'exploitation artisanal	6,89	20,2	6,18	9,09	19,71	7,12	0,080	46,18
ECH 03/SOL. Carrière d'exploitation artisanale	7,20	20,4	5,46	3,6	25,31	1,19	0,011	53,46
ECH 04/SOL. Côté de la maison du chef du village	6,95	20,5	60,18	2,99	6,18	6,43	0,081	23,12
Rivière Kaji bas fond confluence avec la riv Lukusungwe	8,75	20,8	38,12	3,64	19,43	1,11	0,012	45,85
Ancien champs maïs	6,05	20,5	28,43	0,97	6,64	0,83	0,020	22,07
La Dépression	6,60	20,3	32,36	2,99	15,71	0,19	0,020	9,04
Bas fond de la rivière Kaongwe	6,93	20,5	48,95	1,16	7,68	2,83	0,095	27,28
Ancienne carrière d'exploitation artisanale	7,86	20,6	4,54	8,24	27,03	0,12	0,082	52,54
Bas fond riv. Lukusungwe	8,18	20,6	34,6	8,33	7,73	0,14	0,019	34,6

SiO₂ : La silice constitue l'élément majeur le mieux concentré de tous les éléments dosés elle varie de 4,54 à 64,18 % au sein des formations encaissantes ; tandis que dans le gypse, les teneurs en silice sont de l'ordre de 4,54 à 6,18 probablement sous formes de fines inclusions quartzueuses. Cela s'explique par le fait que la silice contenu en grande proportion dans les shales, a été lors du lessivage emporté en faible proportion pour se retrouver dans le gypse par le biais des sources minéralisatrices.

SO₄ : Les sulfates viennent en deuxième position d'importance après la silice. Ses teneurs varient de 2,16 à 53,46 % dans les parties riches en gypse. Ils titrent bien dans le gypse et faiblement dans l'encaissant ; Ces valeurs élevées dans le minéral se justifie par le fait que le sulfate est un constituant du gypse.

CaO : Le CaO occupe la troisième place après la silice et le sulfate, ses teneurs varient de 6,53 à 6,64 % dans l'encaissant et de 19,71 à 27,3 % dans la composition du gypse. Dans l'humus gypsifère, on observe aussi des teneurs en CaO de l'ordre de 7,73 %.

MgO : Les fortes teneurs s'observe dans l'encaissant, ces teneurs décroissent de l'encaissant vers la zone minéralisée où l'élément est très peu exprimé (1,11 %). Les résultats obtenus mettent en évidence une prédominance de la chaux sur la magnésie.

FeO : les teneurs en FeO sont comprises entre 0,97 et 9,39 %. Les fortes teneurs sont concentrés dans l'encaissant est constituant en fait les murs des amas gypseux. Les solutions gypseuses s'étant déposées dans les diaclases et les joints sous forme de lentille dont la puissance diminue du centre vers la périphérie. Ces concentrations en FeO peuvent s'expliquer suite à la dissolution ou à l'oxydation de la pyrite de certaines formations du Kundelungu et de minéraux phylliteux.

Le cuivre, le cobalt, le plomb le zinc et le manganèse sont les éléments majeurs les moins représentés (teneurs inférieures à l'unité et ceci pourrait être lié à la constitution de l'encaissant en ces éléments).

2.3 GISEMENT DE GYPSE DE KAPIRI

2.3.1 SITUATION ET CONFIGURATION

Le gisement de Kapiri est située à ± 18 Km à l'Ouest de l'institut KADIVA de Kansenia. Anciennement exploité par la cimenterie, il s'étend sur la rive droite de la Lunkusungwe, petit affluent de la Kaji, elle-même affluent de la Pande à environ 2 Km au NE de l'école Monseigneur Kabanga. Il occupe un versant très faiblement incliné, vers la cote 1200 m. Le substratum est constitué des schistes rouges micacés, souvent siliceux, de l'assise de kiubo du Kundelungu. Il est dénudé dans des parties anciennes du chantier. On y observe, en roche dure, un développement des cristaux de gypse atteignant souvent 20 cm de long et présentant la mâcle fer de lance ; de semblables cristaux existent dans toute la masse, mais ils sont souvent concentrés en nids ou même en poches plus vastes. Les schistes sont surmontés d'une couche meuble terreuse, gris-noirâtre, d'une puissance de 1 à 4 m. cette couche, la seule en exploitation artisanale actuellement, est constituée en partie par les produits de désagrégation et de décomposition du substratum, avec des passées à humus dans la masse comme en surface (anciens sols de végétation) et même d'abondants débris ligneux.

Le gypse s'y est développé en imprégnation part suite du mouvement alternant de montée et de descente, au gré des saisons, du niveau de la nappe aquifère et, sans doute, par l'action des eaux souterraines circulant dans la masse et s'écoulant notamment au front de taille. Ces actions de cimentation n'ont pas eu la même intensité dans tous les endroits de la tranche : elles ont laissé subsister des zones à forts résidu d'argile et des colonnes à plus fort pourcentage de terre noire, tout en développant ailleurs des amas concrétionnés blancs ou jaunes, massifs et durs, à plus forte teneur. La preuve de semblables actions est fournie par les efflorescences gypseuses et soufrées qui encroûtent en peu de temps la surface dégagée par l'exploitation. En plusieurs endroits du plateau de Kapiri, d'ailleurs, on peut ramasser des rognons de sulfate calcique et observer des efflorescences d'anhydrite et de soufre ; des terres à gypse apparaissent dans plusieurs puits pour eau forcés dans les périmètres maraichers alentour.

Les teneurs sont très variables quoique comparables à celles des autres gisements du secteur. La plupart des puits ont atteint le substratum stérile, bed-rock dur ou désagrégé constitué de schistes à grand cristaux.

3 DISCUSSION

Les eaux sont neutre (voir tableau d'analyse) ; le pH du premier échantillon (tête de source de la Lunkusungwe) est toute fois supérieur (6,36) et celui du puit d'arrosage atteint 3,08. Les données ne sont même pas contrariées par le moment des prélèvements, en pleine saison des pluies, où l'on devrait s'attendre à ce que les sources, alimentées en partie par les précipitations, aient des teneurs nettement plus basses que la résurgence. Ces faits établissent que les sulfates en solution ne proviennent pas de l'action d'une eau normale sur une masse gypseuse préexistante mais au contraire, que le gisement résulte du dépôt des sels en solution dans des eaux minérales.

La masse de gypse à elle seule est d'ailleurs insuffisante comme réservoir pour assurer les débits observés avant le commencement des pluies : il faut admettre une remontée d'eau de la profondeur. Il faut signaler l'effondrement naturel de la rive gauche.

Sur le palier inférieur, les glacis sont beaucoup plus larges. Les aplanissements de ce type, sont donc réalisés après une préparation par l'altération (phase humide), puis aplanissement par enlèvement des produits fins à partir d'un niveau de base (ici la rivière) probablement par le ruissellement en film (phase sèche). Cette zone évolue au ralenti. Une reprise d'érosion trop faible aboutit donc à une asphyxie lente du phénomène et masque les marques de la tectonique sur la roche (failles et cassures) avec les colluvions, les cônes de déjections, les alluvions et éluvions sur la majeure partie de certaines surfaces du fond de la dépression.

Les résultats d'analyses physico-chimiques sur les différents échantillons de Kapiri, montrent que la silice, les sulfates et la chaux sont les éléments majeurs les mieux représentés et prennent une part assez importante dans la composition du gypse. Leur teneur se justifie d'une manière non négligeable par la présence quasi permanente d'intercalation des lits dolomitiques dans les schistes altérés de Kapiri. Ceci est en accord avec nos observations pétrographiques. Dans ces schistes, ces éléments sont moins représentés suite au lessivage par les eaux de la nappe qui affleurent dans la carrière. L'étude de la répartition d'autres éléments analysés met en évidence de fortes teneurs en FeO dans l'encaissant, cela serait dû à la dissolution et à l'oxydation des sulfures où à la présence des minéraux phylliteux (chlorite, séricite) dans les formations du Kundelungu. Les éléments qui n'entre pas dans la composition minéralogique du gypse sont plus concentrés dans l'encaissant. D'ailleurs les grandes tendances géochimiques des roches étudiées ressortent clairement à travers les allures prise par les différents éléments analysés.

Les poches et les nids cristallins observés à Kapiri se sont développés en comprimant et en déformant les feuilletages des schistes encaissant. Les dépôts constituent des Bourrelets dans la topographie de détail et se présentent nettement comme des apports. Et les forts débits observés à la tête de source de la Lunkusungwe avant le commencement des pluies démontrent bien que les occurrences gypsifères de Kapiri, ne peuvent que résulter du dépôt des sels en solution dans les eaux minérales remontant de la profondeur.

REFERENCES

- [1] M. Van de steen 1951: Un facies local des grès de kiubo du kundelungu supérieur, Ann, Soc, Géol. Belg. T.7, pp.135-138.
- [2] P. Raucq 1954 : La dépression de la Pande et ses gisements de gypse (Haut Katanga), Ann, soc. Géologique de Belgique, T. LXXVII.
- [3] M.A. Lefèvre 1974 : Tectonique et Séismologie, soc.roy.Bel .geogr.fasc.III-IV. Bruxelles.
- [4] S. Alexandre Pyre, 1971 : Les processus d'aplanissement de piémont dans les régions marginales du plateau des Bianco, Ann .publ .UOC.vol.XVI.
- [5] M. Robert, 1946 : Le Congo physique, Bruxelles. 273, t. XL S.
- [6] S. Alexandre pyre ,1965 : Le plateau des Bianco, Etude de géomorphologie, Thèse de doctorat. Université de Liège.
- [7] F. Malaisse, 1973 : Caractéristiques climatiques et écologiques du shaba, centre international de Semiologie, Lubumbashi.
- [8] M. Robert, 1913 : Le système du Kundelungu au Katanga ann ; soc. Géol. Publ. Bel. Congo belge pp 13.
- [9] S. Alexandre pyre et serge G.1969 : Etude comparative de dépôts de fonds de vallée dans les trois régions de la zone de savanes laboratoire de géologie et de géographie physique, université de liège pp. 790-900.

The Significance and Values of Indigenous Rituals among the Oromo People: The Case of *Uke* Ritual

Bayissa Negesa Faye

Department of Social Anthropology, Bule Hora University, Ethiopia

Copyright © 2016 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: Indigenous knowledge is the knowledge that indigenous peoples are leading their livelihood and also they learnt it from the actual practices during their day to day life. Among the different aspects of Indigenous knowledge, one is Indigenous ritual; which is conducted by indigenous peoples for very different reasons. Traditionally the Indigenous knowledge were considered as worthless and anybody have had criticizing it. But, currently the reality is promulgated by different scholars as the indigenous knowledge is very crucial in day to day life of indigenous peoples. The research methodology was mainly qualitative research method. The primary data were gathered through observation, FGDs, key informants' interviews, questionnaire and informal conversations. Secondary sources were gathered from the district offices and internet. The *Uke* ritual is the indigenous ritual celebrated by children's whose age are less than 16 years. It is the ritual celebrated with the bread anointed with butter and milk on July 5/12 E.C/July 12/19 in G.C. This ritual has a lot of purposes like commemorating the children's day, consolidating their relationship, training them about their future career, publicizing their right, etc. The political and religious (protestant) domination faced the people during the past regimes contributed much to the weakening of *Uke* ritual. Here, it is also possible to say that before the commencement of Universal Declaration of Human Rights in 1948, the Oromo people have a culture that respects and give guarantee for human right in general and that of children's right in particular.

KEYWORDS: Indigenous Knowledge, Indigenous Ritual and *Uke* ritual.

1 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Indigenous knowledge is the base for every society in different activities like health, agriculture, religion, and etc. among the indigenous communities of the world. Even if it is difficult to give a single definition for the concept Indigenous knowledge, different scholars gave a number of definitions (World Bank 1998: i). According to World Bank (1998: i), even if there is no single definition for the concept, there are "several traits that distinguish Indigenous knowledge (IK) broadly from other knowledge".

This indicates that the concept is very broad and all inclusive in nature. Different indigenous peoples of the world are leading their livelihood by the knowledge they have obtained from their culture and they have learnt it from the actual practices during their day to day life. In relation to this, World Bank (1998: i) states as it is the basis for local decision-making in agriculture, health, natural resource management and other activities across the indigenous peoples.

According to Flavier et al. (1995: 479), IK is "the information base for a society, which facilitates communication and decision-making". They also stated that as indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems (Flavier et al. 1995: 479). According to World Bank (1998: i), the IK is very important in providing the basic problem-solving strategies for local communities.

Among the different aspects of IK, one is Indigenous ritual; which is conducted by indigenous peoples for very different reasons at different periods and also across the culture. Like Indigenous knowledge, the term ritual has also a number of definitions which is emanated from its different purposes and also from its cultural variability. Rappaport (1999: 24) shortly defines the term ritual as “the performance of more or less invariant sequences of formal acts and utterances not entirely encoded by the performers”. On the other hand, Gruenwald (2003: 7) states that “rituals like ceremonies are repeatable events; people can do them for the same purposes, in the same orderly manner, and with the expectation of the same results.” Therefore, rituals are a pattern of activity repeatedly done for different purposes. Generally, ritual is a ceremonial activity or a set of actions which can exist cross-culturally in different communities, with different forms and purposes. Ritual action has, most of the time, its own significance, symbolic representation and value for the practitioners.

Indigenous ritual is thus one of the aspects of IK and it is the indigenous ceremonial activity that is undertaken by the indigenous people for different purposes at different parts of the world. Gruenwald (2003: 7) says that “some rituals have a more localized character, which means that they represent a specific function or identity. In these cases, the specific place and time chosen for the doing of the rituals indicates functional specificity” (Gruenwald 2003: 7). *Uke* ritual is one of such localized ritual and celebrated at specific places and also by specific people. Thus, this research was targeted to study of such localized indigenous ritual, the *Uke* ritual, with its purposes, significances and the values that it gives for the people who celebrate it. *Uke* ritual is the indigenous ritual that is celebrated by indigenous peoples of the Gindeberet District, West Shewa Zone, Oromiya Regional State.

Therefore, this study was targeted on the Significance and Values of Indigenous Rituals among the Oromo People with particular reference to the *Uke* Ritual in Gindeberet District, West Shewa Zone, Oromiya Regional State.

1.2 STATEMENT OF THE PROBLEMS

Traditionally, as it is known, the indigenous knowledge including indigenous rituals was considered as worthless and anybody had been criticizing it. But, currently the reality is promulgated by different scholars as the indigenous knowledge is very crucial in day to day life of indigenous people. In related to this, World Bank (1998: i) says states “Indigenous knowledge provides the basis for problem-solving strategies for local communities, especially the poor. It represents an important component of global knowledge on development issues.” Therefore, indigenous ritual is one aspect of indigenous knowledge that has its own significances and values for the local communities. But, the importance of these indigenous rituals in the study area is still little investigated. So, this study was targeted to reveal the basic significances of *Uke* ritual in different social aspects of the society in the study area and it was also tried to examine the social and cultural values of the *Uke* ritual among the Oromo of the study area.

According to Gruenwald (2003: 7), “rituals are a pattern of activity repeatedly done for different purposes”. However, the purpose of this indigenous ritual, *Uke*, is still little studied. Actually the people that are practicing it have their own insight why they are celebrating it, but anthropologically it could not be analyzed. Thus, this study was also targeted to explore the purposes of the *Uke* ritual in the study area.

Another main problem that was intended to be revealed was that there is little research done to analyze and describe the symbolism of this indigenous ritual with its specific activities. As each practice has its own symbolic meaning and significance among the adherents, the *Uke* ritual has also indigenous symbols which may not have been clearly described. Therefore, this study described its symbolic meanings among the Oromo people, and tries to frame it in the context of theories of ritual and symbolic meaning in social anthropology.

Oromo culture allows the equality of gender in many activities. Some ritual activities might be done by both sexes or sometimes there are different ritual activities which might be confined to a single sex. But in the case of *Uke*, there is little research done on the role of gender participation. Therefore, it would also be needed to identify the gender roles in this ritual, whether or not the consideration is given to gender equality among this indigenous people.

In line to these, based on the above accounts, this study would answer the following basic research questions:

1. What is the logic behind the celebrations of this indigenous ritual, *Uke*?
2. What is the significance that is gained from celebrating such indigenous ritual in the study area?
3. What are the symbolic meanings of celebrating *Uke* ritual?
4. Are there any changes and continuities on this ritual celebration? If there are any changes that faced the ritual, what are the factors for the changes?
5. Are there any considerations that are given to gender participation in celebrating such ritual?

1.3 OBJECTIVES OF THE STUDY

The study has both general and specific objectives:

1.3.1 GENERAL OBJECTIVE

The general objective of the study is to investigate and analyze the significance and values of the indigenous rituals among the Oromo people in general and *Uke* ritual in particular.

1.3.2 SPECIFIC OBJECTIVES

Based on the aforementioned general objective, the specific objectives of the study are the following:

- To investigate the nature, meanings and purposes of *Uke* ritual in the study area.
- To explore the symbolic meanings of *Uke* ritual.
- To investigate the significance of *Uke* ritual among the Oromo people in general and the Oromo of Gindeberet District in particular.
- To examine gender participation within this indigenous ritual.
- To identify the changes and continuities that faced this indigenous ritual practices in the study area.

1.4 SCOPE OF THE STUDY

Topically, this study was delimited to the significance and values of indigenous rituals among the Oromo people with particular emphasis to *Uke* ritual. Putting into consideration time and budget constraints, it is impossible to conduct a research among the whole Oromo people of the study area. As a result, this research was delimited to the *Uke* ritual performed colorfully in Gindeberet district. Among the district, three rural peasant associations such as *Mukadima*, *Mudi Ula Baro*, and *Haroo Berbaboo* and the district's town Kachisi were selected as research site. I selected this district purposely, because of the assumption that this indigenous ritual ceremony is still undertaken in this district, though by assuming that this area is a fertile land for the researchers those who are planned to doing a research on the indigenous rituals.

2 METHODOLOGY

2.1 STUDY DESIGN

The research design applied on this research was mainly qualitative research and minor qualitative research methods. Primary and secondary sources of data were utilized to investigate the significance and values of *Uke* ritual.

2.2 SITE SELECTION

This study has been conducted in Gindeberet district, West Shewa Zone, Oromiya Regional State. To make the data that has been gathered manageable, three rural peasant associations were selected, such as *Mukadima*, *Mudi Ula Baro*, and *Haroo Berbaboo* and additionally the district's town Kachisi was also selected as research site. One of the reasons for selecting these areas was that the prominent Oromo indigenous rituals are still observed. Another reason is that the first two rural peasant associations are inhabited mainly by Tulama Oromo whereas the third rural peasant association is mainly inhabited by Mecha Oromo and therefore by assuming that there may be different occasions in different ritual celebrations that it may serve as additional information to the research. And again, these rural peasant associations are not far away from the district town, Kachisi, so it eases the transportation problems. Finally for the sake of additional variable data that are currently found in the town, the district town, Kachisi, was selected.

2.3 INFORMANTS

The main informants for this research were knowledgeable individuals who are considered as the library and custodians of the Oromo culture in the study area. The total number of the informants that were included in the research was 38. Among these, twelve of them were served as key informants, which include local elders (men and women) in the study sites. Varying age, sex, and educational background have been considered in selecting the informants, in order to determine how

far the young and the elderly know about these indigenous rituals. To investigate the role of women in the indigenous rituals, the women who know, practice and participate in the indigenous rituals were incorporated in the informants.

2.4 DATA GATHERING INSTRUMENTS

Primary and secondary sources were used to gather the necessary data for the research. The primary data were gathered in fieldwork through observation, focus group discussions, in-depth interviews and informal conversations. To make the communication easier with the informants, and for the sake of the natives' worldview, the research was conducted in Afan Oromo and then it was translated to English by the researcher.

2.4.1 OBSERVATION

Observation is used from the very beginning of the data gathering to the end of the fieldwork. The main purpose of the field observation was to see the different environmental characteristics of the study area as well as observing the practices of the people that could be related to indigenous culture. During this period, the researcher also observed some materials that are used to celebrate indigenous rituals and took photographs of the materials.

2.4.2 INFORMAL CONVERSATION

This tool might be used randomly to obtain relevant information while the purpose of discussion may not be directly related to the data gathering activities. It was undertaken while the informants were engaged in some other activity or while walking, during which a conversation started and often directed the discussions towards the topics of the study. Activities like coffee ceremonies, and/or other events might be some of the occasions in which informal conversations were used as means of gathering information.

2.4.3 FOCUS GROUP DISCUSSION

Focus group discussions were used to learn about the collective perception, knowledge and practices of the people in the study area towards Oromo indigenous rituals in general and of the *Uke* in particular. It was also used to cross check and supplement the data gathered through observation and key informants' interviews. There were four focus group discussions that were held to discuss about *Uke* ritual. Among these, one was conducted with the workers of Culture and Tourism bureau of Gindeberet district. All focus group discussions were included both male and female, different religious followers and different age groups of the society. For each groups, there were about 5-8 members with varying age, sex, and religion. To guide the discussions, semi-structured questions were developed by the researcher, but were flexibly used.

2.4.4 IN-DEPTH INTERVIEW

The majority of the informants were selected from the local community, during which the researcher could identified the most knowledgeable individuals. Twelve in-depth interviews were conducted with the selected key informants that were taken from elderly men (nine) women (two) and one with a person who is teaching in Gindeberet high school. The informants that were chosen for this purpose were those who were willing to give the detailed information about their indigenous culture. The in-depth interview questions were semi-structured questions to allow the flexibility in directing questions. Some guiding questions were prepared, whereas the other important questions were asked directly based on the given information.

2.4.5 SURVEY METHOD

Fifty people, as a sampling size, were selected to respond to the questionnaire prepared and distributed to them. The respondents were selected through a simple sample frame without posing some criteria of selection by the researcher. The prepared questionnaire were almost open ended questionnaire and it was distributed mainly to the dwellers of Kachisi town with the assumption that the dwellers are the representatives of the District and also some questionnaire were also distributed to the dwellers around this town. They were selected by giving the priority to those who can read and write Afan Oromo language as a result of the questionnaire had been prepared in Afaan Oromo.

2.4.6 SECONDARY SOURCES

Secondary sources were gathered from different books, articles in journals and published and unpublished theses. Demographic, climatic and topographic data about the study area were obtained from the Gindeberet District administration and Culture and Tourism Offices and it was also browsed from the internet.

2.5 DOCUMENTATION

The data that were collected using the above mentioned instruments were tape-recorded, transcribed and translated into English by the researcher. The data that were obtained through observations and informal discussions were documented in field notes and it could be supplemented the recorded data. The data that were obtained from in-depth interviews and focus group discussions were the main sources of the information and it was recorded by tape-recorder and also documented in field notes. Some photographs related to the study were taken to give the background information for the gathered data.

2.6 DATA ANALYSIS

The qualitative data were analyzed through description immediately after its collection. The data collected through questionnaires were analyzed qualitatively and also quantitatively after the fieldwork.

3 UKE RITUAL: THE INDIGENOUS RITUAL OF CHILDREN

3.1 THE NATURE AND MEANINGS OF *UKE* RITUAL

There are different categories of rituals performed by various groups. Some social groups practice one or all different categories of rituals. These rituals have their own purposes that the meanings and interpretations are given to them by the practitioners. There are a number of indigenous rituals celebrated by the local community at different time and different places for different purposes. Among the indigenous rituals that are performed in Gindeberet district, one is the *Uke* ritual.

The *Uke* ritual is a ritual that is mainly celebrated by children. This ritual is named as *Uke* by Tulama Oromo of the area where it is known as "*Taaboree*" among Macha Oromo of the district. Its celebration system and purpose is similar in both cases.

The *Uke* ritual is the traditional children's ritual and it is the day that children come together and celebrate the ritual by constructing a hut at their vicinity. On the eve of *Uke* ritual, the children construct the hut with their neighbors' children within each locals or neighbors. The hut is built by the children themselves. On the ritual day, the prepared bread and milk have been taken to the area where the hut is built and there the children have celebrating it by having bread and milk and they are revolving/ rotating around their hut. When they revolve around their hut they sing songs. At the end of the rotation of the hut, the children get in to their hut and sit down on the ground by erecting their legs straight. Then their mothers' pour down the milk on the children's leg and bless them by saying "*guddadhaa*" meaning be grow. At the end, the bread which is anointed with butter is eaten with milk within that hut. The milk provided to children for the ritual did not returned back to home even if it is excess and left from the children. They have to drink it and it is their property.

When the children are encircling the hut, they are singing a song by saying:

*"Ukee yaa ukee
Ukee bara kaanii
Kan miilli dagaanii
Ukee bara quufaa
Hindaaqqoo dhudhuufaa"*

Its literal meaning is "oh *Uke*, in the years before a year which leg was very big, *Uke* of the prosperous year, it fart even the hen". This shows that it is difficult to know whether the hen is farting or not. If the year is a prosperous year, this prosperity not only for their children but it also prosperous for hen and the hen is farting during such prosperous years.

The term *Uke* is derived from the name of the object, milk container, especially during the ritual. The ritual is celebrated by children whose age is under 16 years. It is celebrated by the children who are ideally expected to be existed in the first two stages of *Gada* system.

On this ritual, each family has the responsibility to prepare bread for their children. The children eat the bread with milk. If there is a family who has not given the bread to the children on the *Uke* ritual, the children condemn them by saying that: “*tirba taaboree boree kan naaf kenneef tolee kan na dhowwatteef qodaan bukooshee onee*” literally meaning on the days of *Taaboree* (another name of *Uke* ritual) a person who gives me a bread be blessed and who doesn't give me not blessed and their dough container became empty.

The *Uke* ritual lies on July 5 in Ethiopian calendar, but recently, it started to be celebrated on July 12 in E.C. by some areas of the Gindeberet district. According to some of the informants, the *Uke* ritual lies on July 12 in E.C. and where another informant informed to the researcher as it lies on July 5 in E.C. in other peasant associations. Some of the informants were tried to give a justification for the variation of the date when the ritual is to be celebrated by saying that among the Tulama Oromo the *Uke* ritual is celebrated on July 5, whereas it is celebrated on July 12 in E.C. by Macha Oromo of the study area. How and why this gap is created on a single ritual attended by a single community is the question of the researcher that still has not got a convenient answer. With related to this, one of the informants, Obbo Ejeta Gonfa said that the original date of *Uke* ritual is July 5 in E.C. However, latterly the Orthodox Christian religion dominated the local peoples due to its religious purpose and taken the ritual to July 12 in E.C. On the other hands, the ritual is again celebrated by the Oromo of the area on July 5 or 12 in E.C. whereas the Amhara people who are living in the district and also town dwellers are celebrating it on August 13 in E.C. In the district, the ritual which is celebrated on August 13 in E.C. is did not celebrated for indigenous purpose rather for the religious purpose of the Orthodox religion to commemorate the journey of Jesus Christ to mount Tabor, as it stated in the holy bible. For example, in the district town called Kachisi, the Orthodox religion ritual called '*Buhe*' is colorfully celebrated on August 13 in E.C

On the *Uke* celebration, after the completion of each process in the hut and after they eat bread and drink their milk; the children are going to the forests found not far away from their home and they hunt small animals. This may be the training part for their future career. Historically as the Oromo peoples of the area were pastoralist, the pastoralists face different challenges during their mobility with their cattle and even they may face with big animals.

On the same day, they also face a competition with other neighbor groups of children around the river that are found around their vicinity. They made a competition with antagonistic group and they fight with each other. On this competition, they hold a thorny stick known as “*qaqqawwwee*” (sometimes known by the name *Chirii*) and they are hitting each other. Most of the time, this competition by *Chirii/Qaqqawwwee* is under taken in the afternoon. It is also training for their future career, being warrior. In Gada system, war is important and each male Oromo, traditionally have the responsibility to train war and participate in war at their adulthood. Therefore, these children's competition to be a winner on the *Uke* ritual is part of this training. If hard/serious injury occurred on this competition, there is no compensation and no one requires a judge for justice.

The children who are on celebrating the *Uke* ritual have the responsibility of training a war and becoming a winner in swimming, struggling with their age mates, etc. as they will pass through the 2nd stage of Gada and they are entering into the 3rd stage, which is called junior warrior. Their struggling and competition with other groups of other local Children on the *Uke* ritual is to check up whether they are trained well and capable to become a winner and it is an indication for their next stage of being a junior warrior.

According to Obbo Ejeta Gonfa, the *Uke* ritual is celebrated as the demarcation between the spring and summer seasons. It is celebrated at the beginning of dark summer season by assuming that the heavy rain is coming and for the good wish they have to pass safely through this dark season. It is also celebrated at the period when the people started very tedious agriculture works. So they are feeding their children well on this ritual by assuming that they become strong enough after the ritual to participate in any agricultural activities in a very well manner.

Traditionally, the children didn't drink a water or other drinks rather than milk. On this day, the milk as a whole is given to the children and they have full right on it. Milk is a nonalcoholic drunk and it is very important for children.

3.2 HUT BREAKING SYSTEM: GRADUATION FROM THE RITUAL (*SIRNA GODOO CABSUU*)

The *Uke* ritual is celebrated by the boys until their puberty stage (most of the time around the age of 16 year). After puberty stage, they suspend themselves from the ritual practices because of they are not children more, now they are on the stage of adult hood. Thus, to leave the ritual, there should be one system called hut breaking system.

This hut breaking system is part of the *Uke* ritual which is undertaken at the end of age limit of the boys. It is the conclusion ceremony that is conducted by the boys who want to leave the ritual for the last time. The person who performs

'*Sirna Godo Cabsu*', literally meaning hut breaking system, has prepared large bread on for the system and feeding his friends and then he breaks the hut. This is the end of *Uke* ritual for the person.

It is the special ceremony and occasion when a boy wants to terminate the ritual because of his age. The person who wants to terminate the ritual and conducts this special occasion, at the end of the system, he run away by breaking the hut. When he breaks the hut and run away, the children/ boys who are celebrating the ritual are waiting him by holding a stick and they are ready to block him and if they can, they can hit him as much as they can. If the person is strong enough, he have to run away to escape from them and unless otherwise the children have full right to bit him. The children are doing this to keep their system and to show the love they have to the ritual where as for the hut breaker, it is the stage/occasion at which he announces his strength by being younger and by running away and escaping from the biting by other children's.

This hut breaking system is only for boys not for girls. The girls are stopping their participation on *Uke* ritual one when they get married, the other when they came up with ministration period. Seeing ministration is the sign of puberty for the girls. No more *Uke* for girls after they got ministration whereas the boys continue until their puberty stage, probably around 16 years old.

3.3 BRINGING THE *UKE* BREAD SYSTEM (*SIRNA QITA UKEE GEESUU*)

With related to this *Uke* ritual, there is also another issue that should be raised with related to marriage process. On the *Uke* ritual the children have got bread from their family. Ideally the girls are expected to participate on the ritual until they got married (this perception is currently not applicable, because it was applicable during the period at which girls were got married before they were not matured enough, but currently, they are married at the age of more than 18 years old). In Oromo tradition, the fiancée is considered as a member of her husband's family starting from the date they got fiancée. Therefore, the family of a person has the responsibility of bringing the *Uke* bread to their son's fiancée on the ritual or at any time in the year to show their responsibility and the love they have to her. Therefore, this bread bringing to the son's future wife is known as "*Sirna Qita Ukee Geessuu*, meaning bringing the *Uke* bread's system.

3.4 PURPOSES OF *UKE* RITUAL

Traditionally, it is the day of children and they celebrate one to show their happiness and to commemorate the children day. Starting from the ancient time, the Oromo people have a culture that respects the children's right. The main indicators for the existence of child rights in Oromo culture is the existence of *Uke* and *Engicha* rituals (*Engicha* ritual is the indigenous ritual that is celebrated by girls). Before the commencement of Universal Declaration of Human Rights (UDHR) in 1948, the Oromo people have a culture that respects and give guarantee for its people. Thus, it is the ritual that confirms the existence of the children's right in the Oromo culture.

The *Uke* ritual has no religious concern rather than traditions. On this day, the children have to wear well; if possible they celebrate their *Uke* with new clothes. This ritual shows the traditional consideration that is given to children. On this day, even if the children commit a mistake, the family hasn't talk to them hardly with the assumption that it is the day of their freedom.

The boys built a hut by themselves within their vicinity and there the children of their neighbor come together for the celebration of the ritual. Building a hut by the boys shows that as they are practicing their future home construction. Hut is the first home among the Oromo of the area.

3.5 SYMBOLIC INTERPRETATION OF *UKE* RITUAL

There are a number of symbolic interpretations behind the celebration of the *Uke* ritual. Some of the symbolic interpretations of the *Uke* ritual are the following.

First and the most reason why *Uke* ritual is celebrated within the hut that is made up of wet tree is that wet thing have great meaning in Oromo culture. Even different traditional meetings are held under big trees which have done purposely by the Oromo elders to show their hope to live within wet and green environments and the other for their willingness towards prosperity in all directions. Similarly, the children's ritual called *Uke* is celebrated within a hut built from wet tree branches to show the children's future life. Wet tree have green color, green color shows development and good vision. So, to show their hope on their children's, the Oromo of the area celebrate the *Uke* ritual within hut made from wet tree branches. Wet tree is the tree that is on growing, this ritual is similarly to show as children are on growing.

Another reason why the ritual is celebrated within the hut is that the ritual is celebrated during rainy (summer) season. If the rain comes, the hut that is made up of wet tree branches has good protection capacity for only that day. The hut is made from the tree branches that have leaf and by the thought that it is better to protect the rain from the children until they have finished their celebration. The ritual is held only for one day, because the hut is served just for one day, (i.e. it is temporary children's home), and not that much necessary to do more than that.

Among the Oromo people, wetness is blessing, peace and reconciliation. To wish to bless their children and for their hope to live in peace, they built the temporary home for the *Uke* ritual from wet tree branches. When Oromo want to pray to *Waaqa*, they hold green grass with the assumption that *Waaqa* responded to their praying immediately if they hold a green grass. Wetness is the symptom of life and it is very essential for human life.

The bread that is prepared to children on the *Uke* ritual is somewhat different in shape; it shapes tinny and elongated bread; this shape of the bread shows that as the children are growing.

The revolving of children around the hut shows that as the *Uke* ritual comes again after a year, it is endless ritual, and it returns again and again after a year. And also revolving to the hut, shows that as Gada system is cycling based on generation.

Most of the time, the children whose age is under 16 years is considered as cattle keepers (shepherd). Keeping cattle and calves is their main responsibility in the society. Therefore, for the *Uke* ritual, they are entitled to celebrate it with cattle products like milk and butter.

3.6 WHY *UKE* RITUAL IS CELEBRATED ONLY IN THE SUMMER/RAINY SEASON?

In the case of *Uke*, during the summer season there is excess milk and butter, but in the winter it is difficult to get enough milk and butter that is needed to the ritual, because of the existence of sufficient grass for their cattle.

During the summer season, the land is covered by green grass which is very attractive among the Oromo people. There is also excess water for their cattle and also for their cultivation; the environment is covered by green color. Therefore, being green by itself has its own justification among the Oromo of the area. Green is prosperity, peace and also it shows blessing. This is another main reason why such ritual is celebrated in the summer season.

Another reason is that there is great hope among the community that they are waiting for bright season after the summer season. In Oromo calendar, this ritual, *Uke*, has celebrated at the end of the year and also it is the indication for coming of the bright autumn season. During the summer season, especially when this ritual is undertaken, different types of cereals are seeded and it is on the way to grown up and it is the time of hope for the agrarian community of the area. The community expects their cultivation hopefully like their children, why such children ritual is held at this season.

On this ritual, the children's are expected to be play as they want. Thus, during their playing, if the children fail down, they haven't affected that much, because the land is soft during this rainy summer season.

3.7 GENDER PARTICIPATION ON *UKE* RITUAL

Concerning the gender participation on the *Uke* ritual, there are two different arguments: the first arguments says that the *Uke* ritual is only celebrated by boys, and therefore girls have no participation within it while the second argument says that since the *Uke* ritual is a children's ritual, it incorporates both sexes of children. One of the informants, Adde Gete Bulbula, stated her arguments with the support of the first idea that traditionally the girls did not want to the *Uke* ritual celebration place or they did not attend the ritual. She said that the *Uke* ritual is only for boys. However, she also agreed with the second arguments by saying that recently, the girls have started to participate in the *Uke* ritual.

Another informant, Obbo Bokona Debelo, initially supported the first idea by saying that the *Uke* ritual is mainly attended by boys and he also noted that as in some areas, the *Uke* ritual is only attended by boys whereas in another area it is also attended by both boys and girls. Additionally he also said that even if this ritual is attended by both boys and girls, but most of its activities, starting from hut building to fighting and swimming, are dominated by boys. In line with this idea, I have also the information as this ritual is celebrated by both boys and girls.

When I was a child, I was celebrated this ritual with my sisters and in my locals, the ritual is, still today, celebrated by both sexes. I think that this variation in gender participation within a single ritual among the people of the study area may be resulted from the difference in clan, Tulama and Mecha. From this point of view among Mecha Oromo, the *Uke* ritual is merely celebrated by boys whereas among the Tulama, this ritual is celebrated by both boys and girls. Even if the ritual is celebrated by both boys and girls among the Tulama Oromo, the boys take the dominancy in the ritual. For instance, when

the boys want to cease this ritual celebration because of their age, they perform hut breaking system (*sirna gudoo cabsuu*), where this system is not applicable for girls; the girls are stopping it simply without performing any ritual system.

3.8 IMPORTANCE OF *UKE* RITUAL

There are different benefits obtained from celebrating the *Uke* ritual for the local people in particular and for the whole Oromo community in general. Among the distributed open ended questionnaire concerning the significance of this ritual, *Uke*, 98% of the respondents were agreed as it has great contribution for the local people. Some of the significances are the following:

- The main significance that might be obtained from the *Uke* ritual is its tourism attraction. With relation to its tourism attraction, there is nothing done to promote the ritual in government side and it is not promoted by any organizations. If it is promoted well, specially, by public media, it attracts a number of tourists to the area and it generates great income to the district.
- The *Uke* ritual also serves as cultural promotion day. Each activity undertaken on the ritual shows the Oromo culture. It is also a good chance to recall the disappearing culture during the past autocratic regime and to revive the culture. Therefore, this ritual is help to revive and to preserve the culture of the society
- The *Uke* ritual is providing a great contribution to environmental protection. The *Uke* ritual is celebrated in the hut made up of wet tree branches. To get that tree at their locality, each family and also each individual give care for the tree found around their homestead. Therefore, this preservation of the tree due to the ritual makes the ritual as it has its own contribution in environmental protection. Not only the *Uke* ritual that contributes to environmental conservation in Oromo tradition, but each has great respect for the surrounding nature, particularly large trees that serve for shade have been conserved since centuries, but recently, this environmental protection culture is jeopardized due to different reasons.
- Help to show the children as they are in childhood stage of their life. As they terminate or stop the ritual, anybody knows as they become adulthood. It is the first and second stage in Gada stages. Though to practice and experience freely about their future carrier like house construction, being warier, etc. this ritual creates the best opportunity.
- To strength the relationship between the children or it consolidates the relationship between the children's that dwell within the same vicinity. On the ritual day, they came together to celebrate the ritual which directly or indirectly promotes their relationship and it is lays down the base for their future social life and also for the future social cooperation. Therefore, the ritual creates a social cohesion among children who are playing with each other and they share their happiness.
- The *Uke* ritual is the day at which the children's' are checking officially what they were trained during cattle keeping in swimming, struggling with each other, etc. with other groups.
- It helps to entertain (to make happy) the children and it is the ritual celebrated for the children's right and the children's day officially.
- Help to develop the confidence of the children.
- Helps the children to get new clothes
- Help to transfer the existing culture from current generation to the next generation.
- It is the day that children have got relief from different works. On this day, it is forbidden to children to participate in any activities, they are officially free for this ritual.
- The *Uke* ritual help to preserve the traditional material objects like "*Qabee*". (*Qabee* is small traditional milk container and also serves as butter holder for daughters and sometimes serves as container for the delicious traditional meals that are prepared on special occasions.).

3.9 FAMILIES RESPONSIBILITIES ON THE *UKE* RITUAL

The families have their own responsibility on the *Uke* ritual day. The first and main responsibility of the family is that providing the necessary equipment and objects like buying new clothes for the children. The families have to prepare the necessary meals and drinks like bread, butter, milk and others for the children. If they have, it is also the families' responsibility to buy clothes to their children.

Another main responsibility of the family is that freeing the children on the ritual and helping their children in all aspects for the success of the ritual. As we discussed above, on the *Uke* ritual, the children have full freedom and they haven't done anything, on behalf of the children, the family covers every activity of the children.

4 THE CHANGES AND CONTINUITIES OF *Uke* RITUAL

There are a number of changes that have been observed on *Uke* ritual in the study area. Among the distributed open ended questionnaire concerning the changes and continuities of this indigenous ritual, 98% of the respondents were agreed on the existence of the changes on this ritual due to different factors. The basic and fundamental changes were resulted from political and religious dominations.

In the case of politics, as Amhara rulers were penetrated to the area and exercise their authority of ruling the local Oromo's, they were also agitated to exercise their own culture by condemning the Oromo's culture as it is backward and worthless. For instance, Nigus Teklahymanot, Menelik II and etc. were among the feudal rulers who were exercised their power on the culture of the area. Since the introduction of Nigus Teklahymanot to the area, he and his followers were exerted their effort to upload their culture on the local people. According to Obbo Leta Sori, the Amhara treated each traditional culture including *Uke* ritual as backward and worthless. That period onwards the local people started to weaken this ritual. Thus, the local culture in general and *Uke* ritual in particular became under risk at different periods in Oromo history.

As different religions introduced to the Oromo in general and to Gindeberet in particular, they have also their own impacts on the local cultures in general and *Uke* ritual in particular. The dominant religion here is Protestant Christianity, which consists 55.9% of the total population. This religion was introduced to the area very recently. Thus, since its introduction, it has continued to influence on the indigenous ritual practices including the *Uke* ritual, based on its doctrine that discourages any ritual practices and belief systems those have been held out of the church. This is the dominant factor that is taking the lion share role in weakening of this ritual, specially starting from recent past. This religion is undermining the indigenous rituals in general and *Uke* ritual in particular, as they are religious rituals and the adherents of protestant religious haven't allowed to celebrating this ritual. Formerly, the Orthodox Christian was intermingled with the local culture and there was no that much visible domination on the *Uke* ritual. Currently, the serious problem is that when an individual converted his/her religion to protestant is obliged to refrain himself/herself from practicing any indigenous rituals including *Uke*. The protestant Christian is condemning it as it is the act of believing in devil. Therefore, the people are ashamed of practicing it due to the protest religion. It is the rule for protestant religion, but it is culture imperialism for Oromo culture of the area by departing the society from their culture in general and *Uke* ritual in particular.

When the informants compare the extent at which this indigenous ritual is celebrated in the area, now a day's very few homesteads, locals and villagers are exercising it. Even the existing one is also not the original one; one it is blended with strange cultures of other community like Amhara and the other it is the replica of or intermingled with Christian religions. Therefore, the existing cultures in general and the existing *Uke* ritual in particular, are only the vestiges of indigenous *Uke* ritual.

Another change that is seen on such ritual is related with age limit of the ritual. Formerly, even if the culturally specified age for *Uke* ritual participation was around 15/16 years, it was celebrated and participated even by youngsters of more than that age, up to 20 years. This is due to the love they have to the ritual and even they continue to celebrate it with children until they get married. But recently, the participants started to be confined to the provided age only and even children started to stop the celebration before the age limit. This is resulted from the perception of the society that they are on the way of undermining the ritual as it is only of children and also started to be conceived as worthless act.

Formerly, this ritual has a specific date for its celebration throughout the district without any diversification of the dates. But currently, the celebration date for *Uke* ritual is diversified. For instance, in some peasant association (*Ganda*), the *Uke* ritual is celebrated on July 5 in E.C while it is celebrated on July 12 in E.C in another *Ganda* within the same district. Some of my informants believed that the original and traditional date of *Uke* ritual was July 5 in E.C, but due to the influence of Orthodox religion it was taken to July 12 in E.C in some areas. This diversification and complication of this ritual celebration date might be resulted from the factors that were discussed above. Traditionally, the Oromo people have their own calendar; which was the base for each indigenous ritual. As this indigenous calendar was weakening, each ritual celebration date was also forgotten and complicated too much and the people also obliged to leave the original celebration date and they are started celebrating it as they are remembering it.

Another factor that contributed for the changing of this ritual is lack of awareness towards their culture in general and *Uke* ritual in particular. Some of the peoples are undermining the significances of such ritual as worthless and though they are not interested to celebrate it. Currently, most peoples are stopped to celebrate it mainly due to protestant religion and also due to their attitude towards the ritual; basically the negative attitude that they have towards the ritual is emanated formerly from political pressure they faced and but currently from religious domination. For example, in the case of *Uke* ritual, some are only celebrated within a home by eating bread as memorandum of the ritual without building the hut. All

these changes of attitude about such ritual are resulted from the wrong perception towards their culture: perceiving it as worthless culture. In some cases, wrongly these rituals are started to be grouped with harmful traditional practices. In reality there is no harmful things gained from such ritual; but due to lack of awareness, it is abandoned.

Modernity by itself has also its own factor in undermining the indigenous rituals in general and *Uke* ritual in particular. Different households stopped to celebrate the ritual by assuming such ritual as symbols of backwardness. For instance, as the children started to attend the school, they start to undermine the ritual and also started to show low interest towards the ritual. The children themselves haven't interested to such ritual because of the technological advancement. They are more interesting to modernity and modern technological products rather than any traditional cultures including *Uke* ritual. For them, attending such traditional ritual is a symbol of backwardness in attitude. But, the reality is different from this; attending your traditional culture is a symbol of modernity and it is the question of being yourself. If you are undermining yourself by yourself, it may result great crisis, especially it result identity and cultural crisis. Therefore, being yourself and attending your traditional culture including *Uke* ritual is the best solution for the future generation, because of it is saving us from identity crisis.

The economic capacities of the families have also contributing for the changing and weakening of the *Uke* ritual. Traditionally, the family can prepare several couples of bread for their children for *Uke* ritual; but now, some family didn't able to afford several couples of bread, even it becomes difficult to the family to provide the extra bread for the ritual.

Due to inflation of the market and reduction of the number of cattle that the local people have at their hands, nowadays, make it difficult to celebrate the *Uke* ritual. For example, it is difficult to get butter and milk for such ritual for those who haven't milking cattle.

5 CONCLUSION

This study tried to investigate the significance and value of indigenous rituals among the Oromo people with particular reference to *Uke* ritual. The study revealed that every indigenous rituals performed by the Oromo community has its own significance and symbolic representation within the framework of Oromo culture. The *Uke* ritual, as Oromo indigenous ritual, has both manifest and latent functions for the local community. The *Uke* ritual is the indigenous ritual that is celebrated by children and it is a children's ritual. It is the ritual that is celebrated by children within a hut. This ritual is celebrated by children whose age is under 16 years and they are those who are ideally expected to be existed in the first two stages of *Gada* system; *Ittimakoo* and *Daballee*. The name of this ritual is derived from the name of the traditional objective called *Uke* that served as milk container.

On the eve of this ritual ceremony, the children of the vicinity came together and built a hut. Within the hut the children's are celebrating the *Uke* ritual. During the celebration, the children are expected to have bread that is anointed with butter and milk and they are revolving/ rotating around their hut. At the end of the rotation, they have eaten the bread with milk.

The study shows that on this ritual, the children are training fighting with each other to show their future career being a warrior as they will pass through the 2nd stage of *Gada* and they are entering into the 3rd stage, which is called junior warrior.

The *Uke* ritual is the ritual that is celebrated by both boys and girls among some areas of the study area and also celebrated by boys in another area. Therefore, this ritual assures the gender equality in the participation of indigenous rituals including the *Uke* ritual in the study area.

The study also shows that there is a symbolic representation of the *Uke* ritual. The hut is built from wet tree branches to show that the children are wet and they are on growing. Traditionally, this ritual is the ritual that is celebrated to show the happiness of the children and also to commemorate the children day. Therefore, this ritual assures the right that are traditionally given to the children among the Oromo people in general and Oromo of the study area in particular. Here it is also possible to say that before the commencement of Universal Declaration of Human Rights (UDHR) in 1948, the Oromo people have a culture that respects and give guarantee for human right in general and that of children's right in particular.

Among the main contributions of the *Uke* ritual, one is that the ritual might be a source of income in the future if it is promoted well by being source of tourist attraction. The ritual is also useful by being a cultural promotion day and it is also a good chance to recall the endangered culture during the past autocratic regime and to revive the culture.

The *Uke* ritual is again significant in providing great contribution to the environmental protection by preserving the tree. The ritual is helpful in distinguishing the children from adults as they are celebrating it until they are in childhood and as they terminate the ritual, it is an indication as they become adulthood.

The study revealed that The *Uke* ritual is useful in strengthening the relationship between the children and it creates a social cohesion among children who are playing with each other and they share their happiness on this day. It helps to make the children happy, develop the confidence of the children, transfer the existing culture from current generation to the next generation, preserve the traditional material objects, etc.

The study also shows that there are different problems that are created due to the existence of different changes on these indigenous rituals. There are a number of changes that have seen/observed on *Uke* ritual in the study area. The basic and fundamental factors to these changes were resulted from political and religious subjugations. During the past regimes, different rulers of the Amhara were politically and also culturally undermined the local peoples for a long period of time which resulted with the later complications of indigenous rituals including *Uke* ritual. As different religious organizations were introduced to the area, they have putted their own marks of complications on the local cultures in general and *Uke* ritual in particular, especially in the recent past the protestant religion is conducting cultural imperialism among the Oromo of the study area and it restricts the majority of the peoples from participating and practicing any indigenous rituals. As a result, the existing cultures in general and *Uke* ritual in particular, are only the vestiges of indigenous rituals, currently this rituals are lost their main traditional components and it is also celebrated by few households.

As the study shows that another change that is observed on such rituals is related to age limit of the *Uke* ritual. Traditionally, even if the culturally specified age for *Uke* ritual was around 15/16 years, it was celebrated and participated even by youngsters of more than that age, up to 20 years. But recently, the participants started to be confined to the provided age only or under the provided age which was resulted from the perception of the society that they are on the way of undermining the ritual as it is only of children and also started to be conceived as worthless act.

Another problem that faced this indigenous ritual is that traditionally there was a clear date for the celebration of such ritual, but currently, the celebration dates for the ritual is diversified due to the weakening of the Oromo traditional calendaring system and also due to the interference of religious organizations. Lack of awareness towards their culture in general and *Uke* ritual in particular is also another factor that is contributing for the changing of this ritual. Modernity has also its own factor in undermining the indigenous rituals in general and *Uke* ritual in particular.

The weakening of the households in their economic capacities has also contributing for the changing and weakening of *Uke* ritual. Among the main important things for the celebration of *Uke* ritual is that milk and butter and thus as the families are losing their milking cows due to different factors, they are minimizing the celebration practice step by step. This may be resulted from inflation of the market and reduction of the number of cattle that the local people have at their hands; nowadays it becomes difficult to celebrate the *Uke* ritual as it was celebrated formerly.

Nowadays, the technological advancement also minimizes the interests of the children from the celebration of such ritual and their interest is greater to modernity and modern technological products rather than any traditional cultures including *Uke* ritual.

REFERENCES

- [1] Andrew Edgar and Peter Sedgwick (2002). *Cultural Theory: The Key Thinkers*. By Routledge, London and New York.
- [2] Bharati Sen (2005). *Indigenous knowledge for development: Bringing research and practice together*. The International Information & Library Review (2005) 37 , 375 – 382; SHPT School of Library Science & University Librarian (Addl. Charge), SNDT Women's University, Mumbai 400020, India.
- [3] Child, Alice B. and Irvin L. Child (1993). *Religion and Magic in the Life of Traditional Peoples*. Englewood Cliffs: Prentice Hall.
- [4] Concise Oxford Dictionary. Tenth edition, Oxford University press.
- [5] Davies, Douglas J. (2002). *Anthropology and Theology*. Berg, Oxford.
- [6] Dejene Gemechu Chala (2002). *Some Aspects of Conflict and Conflict Resolution among Waliso Oromo of Eastern Macha: With Particular Emphasis on the Guma*. MA Thesis, Addis Ababa, Addis Ababa University.
- [7] Dirks, Robert (1988). *Annual Rituals of Conflict*. American Anthropologist, New Series, Vol. 90, No. 4 (Dec., 1988), pp. 856-870.
- [8] Donald Getz (2010). *The Nature and Scope of Festival Studies*. International Journal of Event Management Research: Volume 5, Number 1, 2010. University of Calgary, Canada.
- [9] Ellen, Roy, & Harris, Holly. (1997). *Concepts of indigenous environmental knowledge in scientific and development studies literature—a critical assessment*. UK: APFT Project.
http://lucy.ukc.ac.uk/Rainforest/SML_files/Occpap/indigknow.occpap_TOC.html;
- [10] Eller, Jack David (2007). *Introducing Anthropology of Religion: Culture to Ultimate*. New York and London: Routledge.

- [11] Falassi, A. (Ed.). (1987). *Time Out of Time: Essays on the Festival*. Albuquerque: University of New Mexico Press.
- [12] Flavier, J.M. et al. (1995) 'The regional program for the promotion of indigenous knowledge in Asia', pp. 479-487 in Warren, D.M., L.J. Slikkerveer and D. Brokensha (eds) *The cultural dimension of development: Indigenous knowledge systems*. London: Intermediate Technology Publications.
- [13] Friedrich, Paul (1966). *Revolutionary Politics and Communal Ritual*. In: *Political Anthropology*. Edited by Marc J. Swartz, Victor W. Turner and Arthus Tuden. New Brunswick (USA) and London: Transaction Publishers.
- [14] Gada Melba (1988). *Oromiya: An Introduction*. Khartoum: Kirk House Publishers.
- [15] Geertz, Clifford (1966). *Religion as Cultural System*. In: *Anthropological Approaches to the Study of Religion*. (ASA monographs 3, edited by Michael Banton), New York: Tavistock.
- [16] Geertz, Clifford (1973). *The Interpretations of Cultures*. New York: Basic Books
- [17] Getz, D. (2005). *Event Management and Event Tourism* (2nd ed.). New York: Cognizant.
- [18] Gindeberet Woreda Profile.
http://oromiyaa.com/index.php?option=com_content&view=article&id=233&Itemid=546
- [19] Gruenwald, Ithamar (2003). *Rituals and Ritual Theory in Ancient Israel*. (The Brill Reference Library of Judaism, Vol. 10), Leiden: Brill.
- [20] Hailu Ejersa (2009). *Change and Continuity of Traditional Ritual Practices among the Oromo: The Case of Irecha in Bishoftu Area*. M.A. Thesis, IES, Addis Ababa, Addis Ababa University.
- [21] Haviland, William A., Harald E. L. Pins, Dana Walrath and Bunny McBride (2007). *Introduction to Anthropology*. (India edition), Australia: Wadsworth Cengage Learning.
- [22] Kate Joranson (2008). Indigenous knowledge and the knowledge commons: The International Information & Library Review (2008) 40, 64–72, University of Pittsburgh, Pittsburgh, PA, USA
- [23] Keesing, Felix M. (1958). *Cultural Anthropology: The Science of Custom*. New York: Rinehart.
- [24] Kertzer, David I. (1988). *Ritual, Politics and Power*. New Haven, London: Yale University Pr.
- [25] Kottak, Conrad Phillip (2000). *Cultural Anthropology*. 8th edition, Michigan University, Boston: McGraw-Hill.
- [26] Lewellen, Ted C. (2003). *Political Anthropology: An Introduction*. 3rd edition, London: Preager.
- [27] Maret, Pierre de (1994). *Archaeological and Other Prehistoric Evidence of Traditional African Religious Expression*. In: *Religion in Africa; Experience and Expression*. Ed. by Thomas D. Blakely, Walter E. A. Van Beek and Dennis L. Thomson. London: James Currey.
- [28] Mensele M. S. (2011). A study of rituals performed at two sacred sites in the Eastern Free State. MA thesis, Bloemfontein, University of the Free State
- [29] Morris, Brian (1987). *Anthropological Studies of Religion: An Introductory Text*. Cambridge: Cambridge University Pr.
- [30] Niteshi Tripathi and Shefali Bhattarya (2004). Integrating indigenous knowledge and GIS for participatory natural resource management: state-of-the-practice; university of Florida.
- [31] Pieper, J. (1965). *In Tune With the World: A Theory of Festivity*. New York: Harcourt.
- [32] Rappaport, Roy A. (1999). *Ritual and Religion in the Making of Humanity*. (Cambridge Studies in Social and Cultural Anthropology). Cambridge: Cambridge University Pr.
- [33] Roy Ellen, Peter Parkes, Alan Bicker (Editors) (2000). *Indigenous Environmental Knowledge and its Transformations: Critical Anthropological Perspectives: University of Kent at Canterbury, UK*, Harwood academic publishers
- [34] Scupin, R. and R. Decorse (2005). *Anthropology; A Global Perspective*. Fifth edition. New Delhi: Prentice-Hall of India.
- [35] Scupin, R. and R. Decorse (2012). *Anthropology; A Global Perspective*. Seventh edition. Boston: Pearson.
- [36] Semali, L., & Kincheloe, J. (1999). What is indigenous knowledge and why should we study it? In L. Semali & J. Kincheloe (Eds.), *What is indigenous knowledge?: Voices from the academy*. New York: Falmer Press.
- [37] Warren, D. M. (1991). Using Indigenous Knowledge in Agricultural Development; World Bank Discussion Paper No.127. Washington, D.C.: The World Bank.
- [38] West Shewa zone Finance and Economic Development office (2001 E.C).
http://www.oromiyaa.com/english/index.php?option=com_content&view=article&id=671:west-shewa-zone-profile&catid=118:wshewa&Itemid=466.
- [39] World Bank (1998). *Indigenous Knowledge for Development: A Framework for Action*. Knowledge and learning center, Africa region, November 4, 1998.

Service quality, Customer Satisfaction and Loyalty of Commercial Banks in Ethiopia

Abiyot Tsegaye Kibret and Gemechu Nemera Dinber

Arbaminch University, College of Business and Economics, Department of Management,
P.O. Box 21, Arbamich, Ethiopia

Copyright © 2016 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: Healthiness of financial system of a country depends on the success and competitiveness of financial institutions. The success and competitiveness of financial institutions are primarily realized through banks service quality, customer satisfaction and customer loyalty. Cognizant to these facts, this research was conducted to evaluate service quality, customer satisfaction and customer loyalty of commercial banks in Ethiopia. Two hundred three customers were surveyed with purposive sampling from selected commercial banks in major cities in the country. Further, the study explored the relationship among service quality, customer satisfaction and customer loyalty in Ethiopian Banking industry. The study revealed that customers are not satisfied with all dimensions of service quality of commercial banks in Ethiopia, and customers are not loyal to the banks. The study, further, confirmed that service quality, customer satisfaction and loyalty were found to be significantly correlated. Moreover, the study disclosed the existence of significant difference between private banks and public banks for the variables mentioned. The study recommends that banks in general and commercial bank of Ethiopia in particular have to improve the tangibility, reliability, responsiveness, assurance and empathy dimension of service quality in order to satisfy customers and hence to make customers loyal to banks.

KEYWORDS: service quality, customer satisfaction, customer loyalty, commercial banks, SERVQUAL.

1 BACKGROUND

1.1 INTRODUCTION

Economic growth and development of a country depends on the strength of financial sector of the country (Law & No, 2004). Countries with strong financial institutions enjoy resilient economic growth and less prone to shocks resulting from natural or social disasters (Fonchamnyo, 2013). The strength of financial institutions determines the wellbeing of different economic categories of countries. Countries with strong financial institutions are mainly economically developed while countries with less developed economies have underdeveloped financial institutions despite it is arguable about which one comes first. Leaving the argument aside, the vivid issue in the prevailing condition is that the strength of financial institutions of a country and its development are strongly correlated. One of the financial institutions that offer the financial service is bank which is defined as an organization which provides services on acceptance of deposits and provision of loans.

Since the ancient time banks and banking services have played a vital role in the economic, social and political matters of a country and the world as whole. Even though some literatures trace back the history of banking and banks from 200BC, in a more organized and structured manner it was started in late 14th century. Since then countries have been using banks and banking service in order to manage the financial resource of countries. The development of banking spread from northern Italy throughout the Roman Empire and in the 15th and 16th century to northern Europe. This was followed by a number of important innovations that took place in Netherlands during the Dutch Republic in the 17th century and in London in the 18th century. During the 20th century, developments in science and technology caused major changes to banks' operations and let banks dramatically increase in size and geographic spread.

Nowadays banks are at the centre of all economic aspects of a country and the world at large. Banks attract depositors by introducing attractive deposit schemes and providing rewards or return in the form of interest to create a habit of saving.

Banks increase capital formation by collecting deposits and converting these deposits into loans which expedite industrialization. In similar manner, banks facilitate the development of trade and commerce because customers send to and receive money from anywhere in the world via banks and banking services. Further, banks create job opportunity directly and indirectly because banks hire large manpower and promote investment which creates immense job opportunity locally and internationally. In addition, banks enable governments to implement monetary policies because banks are used as a tool to stabilize financial system of the country and enable the government to manage financial related crisis.

However, the role that banks can play in economic growth and development activity depends on banks and banking sector strength which can be expressed through different variables. Mainly, the availability of the service and the quality of the service are considered as major factors that determine the strength of banks and banking industry of a country. The degree of coverage of banking service in a country is taken as one of the main factors that enable economic growth and development resilient. Despite the growth rate is stagnant, developing countries are increasing the availability and penetration of banks and banking services as part of economic growth and development endeavours. Ethiopia is one of the developing countries which take banking service as one of the tools for resilient economic growth and economic development.

Banking service is about a century old practice in Ethiopia. Banking service was started in early 20th century in Ethiopia when an agreement was reached between Emperor Minilik II and Mr. Ma Gillivray, representative of the British owned National Bank of Egypt, in 1905 (Shanka, 2012). The agreement enabled the country to establish the first bank called "Bank of Abyssinia" in 1906. However, because of the societies' being new for the banking service, Bank of Abyssinia had faced difficulty to familiarize to public. As a result, in 1931 Bank of Abyssinia was legally replaced by Bank of Ethiopia which was a purely Ethiopian institution and the first indigenous bank in Africa (Shanka, 2012). During the invasion, the Italians established branches of their main Banks and started operation in the main towns of the country. However, they all ceased operation soon after liberation in 1941.

After complete liberation, in 1943, the State Bank of Ethiopia commenced full operation to act as the central Bank of Ethiopia and had a power to issue bank notes and coins as the agent of the Ministry of Finance (Awoke, 2015). The Bank also functioned as the principal commercial bank in the country and engaged in all commercial banking activities. After enacting the monetary and banking law in 1963, state bank of Ethiopia was divided into two: National Bank of Ethiopia and Commercial Bank of Ethiopia. Then, many private banks had been established until the military government nationalized all private banks and prohibited any new establishment as of 1974. After the downfall of the military regime in 1991, many private banks have been established in the country. Now the country has a total of 17 private banks and two government banks. The banking sector of Ethiopia comprises one central bank (National Bank of Ethiopia), two public banks and sixteen private banks with a total of 1724 branches and 23 billion birr capital (National Bank of Ethiopia, 2013). As a result, bank branch to population ratio revolves around 50,000.

Despite the availability and accessibility banks and its service have been burgeoning in the past two decades, its service quality and customer satisfaction has not been demarcated. Availability and accessibility does not guarantee survival and growth in the globalized world. In more recent era, countries are joining the global trade stadium in a willy-nilly context. Cognizant to the fact, Ethiopia is joining the international trade arena in more recent reforms. Such internationalization requires improvement in quality which primarily determinants customer satisfaction and customer loyalty. If the banking sectors' quality and customer satisfaction among other factors are not gauged time after time, it may be feeble to realize resilient economic growth and development as well may retard global competitiveness.

The reason for banking sectors survival, growth and competitiveness is customer satisfaction which is taken as derivative of service quality. Customer satisfaction is at the centre of banks survival and growth in the competitive environment. Examining the banking service quality enables banks to survive, grow and to be competitive in their scope while making the nation to enjoy the banking services with its full packages. Better banking service quality attracts more customers into the industry, stimulate investment, create job opportunity and safeguarded the financial sectors. Similarly, better banking service quality creates satisfied customer which in turn be loyal to the bank. Service quality is one of the critical success factors that influence the competitiveness of an organization. A bank can differentiate itself from competitors by providing high quality service. The interrelationships between service quality, customer satisfaction and customer loyalty may provide creative ideas for improving services in order to gain a competitive advantage (Hallowell, 1996) (Caruana, 2016). Many globally dominant and successful banks have achieved their current position by innovating and improving the service provision through meticulous evaluation of service quality and customer satisfaction (Koskosas, 1995). However, banking service quality and customer satisfaction have not been thoroughly investigated in Ethiopia. Therefore, this study examined banking service quality, customer satisfaction and customer loyalty in selected government and private banks. Further, the study evaluated the relationship between service quality, customer satisfaction, customer loyalty and factors affect the relationship.

1.2 STATEMENT OF THE PROBLEM

Despite the banking service is booming dramatically in Ethiopia, the service quality level and customer satisfaction has not been thoroughly examined. Since 1991, when the Derge regime was overthrown, the banking sector has been growing in many dimensions. The total banks' number has gone up from about four to nineteen and the number of branches has grown up from about less than one hundred to more than two thousand. The growth has enabled different pockets of the country to get banking service through different approaches. The growth improved the penetration rate in more recent times as a branch- population decreased from five hundred thousand a decade ago to about fifty thousand. However, the increase in availability and accessibility does not guarantee competitiveness in the globalized business environment. Nowadays, service quality and customer satisfaction are willy-nilly in the banking sector to survive and grow because the pressure from globalization and multinational banks may pose danger to the domestic banks. In the same token, the growing demand for quality service and growing expectation from the domestic consumers as a result of improving educational background and burgeoning income, it is a must to gauge service quality, customer satisfaction and customer loyalty in order to make possible amendments on the service provision. Hence, this research investigated service quality, customer satisfaction, customer loyalty in commercial banking sector; factors affecting these variables and the relationship between variables mentioned above.

1.3 RESEARCH QUESTIONS

This research addressed the following questions:

- Do commercial banks provide quality service to their customers?
- Are customers of commercial banks satisfied with the service quality?
- Are customers of commercial banks loyal to their banks?
- What is the relationship between service quality, customer satisfaction and customer loyalty?
- What is the effect of service quality on customer satisfaction and customer loyalty?
- Does the ownership matter on the service quality and customer satisfaction in the banking sector?

1.4 RESEARCH OBJECTIVES

The objective of this research is to:

- Assess if commercial banks provide a quality service to their customers
- Identify if customers of commercial banks in Ethiopia are satisfied with the service delivery
- Explore the customers' loyalty of commercial banks
- Study the relationship between service quality, customer satisfaction and customer loyalty
- Explain the effect of service quality on customer satisfaction and customer loyalty

1.5 RESEARCH HYPOTHESES

This research will test the following research Hypotheses

- Commercial banks in Ethiopia provide a quality service to their customers
- Customers of commercial banks in Ethiopia are satisfied with the service delivery
- Customers of commercial banks are loyal
- There is no significant difference between public and private commercial banks regarding
- There is statistical significant relationship among service quality, customer satisfaction and customer loyalty
- Customer satisfaction has significant effect on the relationship between service quality and customer loyalty.

1.6 CONCEPTUAL MODEL

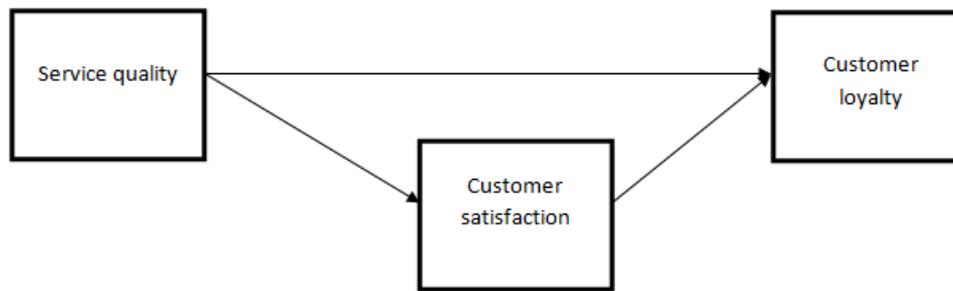


Fig. 1. Conceptual framework for the study

1.7 SIGNIFICANCE OF THE STUDY

The study assessed service quality, customer satisfaction and customer loyalty in Commercial banks in Ethiopia. Hence, it provides direction to bank managers, owners of banks and policy makers about customers’ perception of service quality, customer satisfaction and customer loyalty. It also tests the validity of the SERVQUAL model in banking sectors in Ethiopia. Further, the findings can be a stepping stone for future researches in banking industries and other service sectors.

2 MATERIAL AND METHODS

2.1 INTRODUCTION

The literature review part focused on relationships among service quality, customer satisfaction, and customer loyalty examine the relationships from two perspectives. The first argument focuses on that customer satisfaction influences customer loyalty while others argue that customer satisfaction is the result of a customer’s perception of the value received in a transaction or relationship, where value equals perceived service quality relative, and in turn the service quality and customer satisfaction together or independently affect customer loyalty. The later mainly argues that without understanding the service quality it is difficult to grasp the customer loyalty tendency only from customer satisfaction. This literature gives insight on the impact service quality, customer satisfaction and customer loyalty with special focus on the banking. Further, the review incorporates service quality, customer satisfaction customer and customer loyalty findings from Ethiopian banking industry.

2.2 SERVICE QUALITY

The concept service quality is an amalgamation of two words: Service and Quality. Service is process consisting of a series of intangible activities that take place in interface between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems(Du & Tang, 2014; Malik, 2012). Quality in its literal meaning shows consumers expectation and actual perception of the product or the service offered by an organization. Hence, service quality shows consumers attitude or cognitive judgment related to a particular service and customers overall impression about the inferiority or superiority of the service and the service providing organization(Du & Tang, 2014; Oh, 1999).

Service quality in its broader sense shows the comparison that customers make between the expectation about a service and the perception about how the service is performed. However, the definition of service quality in its detail has resulted in many arguments (Du & Tang, 2014; Jacobucci, Ostrom, & Grayson, 2001; Karim, 2014). According to Parasuraman et al.(2010), service quality is the difference between anticipated services (customer expectations) and perceived service (customer perceptions). Similarly, service quality is defined as the outcomes of the customer’s overall evaluation of the differences between service expectations and the actual service performance(Khafafa & Shafii, 2013).Mosahab(2010) explained service quality as the act of meeting the desired and / expected needs of the customer.

The variation in the definition and conceptualization resulted in putting service quality from various dimensions. Lehtinen (1982) proposed three-dimensional views of service quality: interaction, physical and corporate quality. Further, from customers’ perspective, two new dimensions were promoted by Grönroos(1994) as technical(output) quality and functional

(process) quality. The technical quality refers to what is offered to the customer be it a maintenance, consultancy, dress, or meal while the functional quality indicate show the end result of the produces is transferred to the customer.

In more elaborated and comprehensive approach, Parasuraman et al., (1985) put service quality with five dimensions which were developed from intensive qualitative and quantitative researches. Parasuraman et al (1985) conducted a study to examine the concept of Service Quality through an in-depth interviews and Focus Group discussions. Further, Parasuraman et al(1994) advanced the research to develop a model and an instrument to gauge consumers' perception of Service Quality which is termed as SERVQUAL. Despite SERVQUAL had many dimensions, latter on, five dimensions are purified and remained to measure service quality. These are:

- Tangibles – physical facilities, appearance of personnel and equipment
- Reliability – ability to perform the promised service dependably and accurately
- Responsiveness – willingness to help customers and provide prompt service
- Assurance - ability of the organization's employees to inspire trust and confidence in the organization through their knowledge and courtesy. It is a combination of items designed originally to assess competence, courtesy, credibility, and security).
- Empathy –It is conceptualized as a personalized attention given to customer and it comprises items designed originally to assess access, communication, and understanding the customer).

Optimizing on the above mentioned dimensions, Parasuraman et al (1994) proposed a service quality model termed as GAP model from the view point of customers and owners. The model assumes that service quality is the difference between expectation and performances relating to quality dimensions mentioned above. These differences are referred to as gaps. The first four gaps show the service quality issue from the view point of the owner or the manager but the last indicates the customers' perspective of service quality(Shahin, n.d.).The model conceptualizes five gaps which are:

Gap 1: Gap between consumer expectations and management perception: Management may think that they know what consumers want and proceed to deliver it when in fact consumers may expect something quite different (not identifying what consumers expect).

Gap 2: Gap between management perception and service quality specification: Management may not set quality specifications or may not set them clearly. Alternatively, management may set clear quality specifications, but they may not be achievable (inappropriate service quality standards)

Gap 3: Gap between service quality specifications and service delivery: unforeseen problems or poor management can lead to failure of a service provider to meet service quality specifications. This may be due to human error but also to mechanical breakdown of facilitating or support goods (poor delivery of service quality).

Gap 4: Gap between service delivery and external communications: There may be dissatisfaction with a service because of the excessively heightened expectations developed through the service provider's communications efforts. Dissatisfaction developed through the service provider's communications efforts. Dissatisfaction occurs when actual delivery does not meet up to the expectations held out in a company's communications (promises mismatch delivery).

Gap 5: Gap between perceived service and expected service: This gap occurs as a result of one or more of the previous gaps. The way in which customers perceive actual service delivery does not match up with their initial expectations.

As other service sectors, banking industry has also been measuring service quality in order to evaluate customer satisfaction and customer loyalty. However, the way service quality has been measured in the banking industry is still under argument. The SERVQUAL approach has not escaped from critics(Bahia & Nantel, 2000). Particularly, in terms of banking industry, Bahia and Nantel(2000) conducted a research to develop a valid measurement of perceived service quality in the Banking sector. Hence, they proposed a scale that was called Bank Service Quality (BSQ) which comprises 31 items classified across six dimensions as: effectiveness and assurance, access, price, tangibles, range of services offered and accuracy and reliability. They proved that the dimensions of BSQ are more reliable than the dimensions of SERVQUAL. The seven attributes in assessing BSQ are:

- Bank atmosphere - environment of the bank including the attitude of the staffs.
- Relationship - it indicates the personal relationship with the bank employees.
- Rates and charges - an individual's perception of BSQ is affected by the low cost and high interest rates.
- Available and convenient services - it indicates the full range of available services, convenient and easily accessible.
- ATMs - it indicates the availability of the automatic teller machines.
- Reliability/honesty - it emphasizes on the solid bank ratings and reliable, honest staff.
- Tellers - enough and accessible tellers.

Despite the BSQ showed some reliability and validity in some circumstances, its applicability has been with challenges. Hence, nowadays, many service quality examination in the banking sectors rely on the SERVQUAL(Sakhaei & Afshari, 2014; Shaikh, 2014; Shanka, 2012). The applicability of the SERVQUAL measure is well established in the banking industry(Asubonteng, Mccleary, & Swan, 1996). SERVQUAL is the best measure of service quality in the banking industry in both developed and developing country(Malik, 2012). Different findings witnessed the applicability of SERVQUAL in the Banking industry (Malik, 2012; Shanka, 2012). However, it was found that all the dimensions are not equally important in explaining variance in overall service quality. Findings indicated that responsiveness and reliability seem to be the most important dimensions followed by the empathy and tangible dimensions; whereas, assurance appears to be the least important dimension(Siddiqi, 2011). Most of the studies concluded that SERVQUAL is the best measure of service quality in banking industry.

2.3 CUSTOMER SATISFACTION

Concept of customer satisfaction is a fundamental issue in marketing as it is a major outcome of marketing activity and it links the processes of purchase and consumption or use of the product or service to attitude change, repeat purchase and finally loyalty. Primarily, the concept is related to the marketing concept that profit is generated through satisfaction of customer needs and wants. Concept of customer satisfaction is new to many companies, who have been focused on price and availability of products.

Customer satisfaction is defined and explained in different ways and different perspectives. Customer satisfaction is in broader sense defined as consumers feeling and happiness after complete meeting of one's expectations(Du & Tang, 2014). Similarly, Jacobucci et al.,(2001) define customer satisfaction as the feeling or attitude of a customer towards a product or service after it has been used. For example, if customers got satisfied with a particular service, they are likely to repurchase the product itself or other lines of the product. Customer satisfaction is a state of mind that customers have about a product or services after using that product and service offered by a company in return of customer expectations about the products.

Customer Satisfaction helps to connect purchase processes and consumption with post purchase perception such as attitude change, repurchase, and customer loyalty(Mosahab et al., 2010; Oliver, 1980). There are many models which are designed to gauge customer satisfaction. However, a model developed by Oliver(1980) has been used applied in different conditions and settings. The model explains that when the customers compare their perceptions of actual products/services performance with the expectations, then the feelings of satisfaction arise. Any gap between the expectations and the actual performance create the disconfirmation. Oliver (1980) identified three types of disconfirmation:

- Positive disconfirmation occurs when Product/service actual performance is greater than expectations. In this case, the customers are highly satisfied.
- Negative disconfirmation occurs when Product/service actual performance is less than expectations. In this case, the customers are highly dissatisfied.
- Zero disconfirmation occurs when Product/service actual performance is equal to expectations.

Empirically, models developed by different scholars on customer satisfaction, have been tested in different industrial sectors. As it is explained in service quality part, in the competitive business market, many firms are focusing on their efforts on maintaining a loyal customer base. In the same token, most of the banks set their strategies towards increasing customer satisfaction and loyalty the quality of service. Researches pointed out that customers perceive quite little difference in the services given by banks and changes in the services are mimicked by competitors(Karim, 2014; Khafafa & Shafii, 2013). It is found out that tangibility, reliability, responsiveness, assurance and empathy are important factor for customer satisfaction(Karim, 2014; Ragavan & R.Mageh, 2013). Ragavan & R.Mageh(2013) found that assurance, empathy and tangibles are very important dimension in the banking industry.

2.4 CUSTOMER LOYALTY

Customer loyalty is about what customers think and do (or try to do). In its literal meaning loyalty is best defined as a state of mind, a set of attitudes, beliefs, desires etc. Loyalty is developed by approaches which reinforce and develop a positive state of mind and the associated behaviours (Malik, 2012). Predominately, customer loyalty depends on the service offered and the degree of satisfaction that the customer gets from the service provision. Despite other factors affect(Shimp & Sharma, 1987), the loyalty is strongly connected service quality and customer satisfaction(A. Parasuraman, Valaries A Zeitmal, 1994). If the quality of the service fails short of the customers' expectation, it is unthinkable to have loyal customer. Mosahab et al.(2010) developed a conceptual model that correlates Service Quality, Customer Satisfaction and Customer

Loyalty in one frame. The conceptual model has been tested empirically and the findings indicate that customer satisfaction is influenced by the quality of service and both service quality and customer satisfaction affect customer loyalty.

2.5 RELATIONSHIP BETWEEN SERVICE QUALITY, CUSTOMER SATISFACTION AND LOYALTY

The relationship between customer satisfaction and service quality has been under argument for long time (Jacobucci et al., 2001). These constructs, in business and marketing literatures, have been perceived as a distinct, but closely related constructs (Jacobucci et al., 2001). Studies indicate that positive relationship between the two constructs (Suki & Suki, 2013). Some researchers argued that service quality is the antecedent of customer satisfaction, while others argued the opposite relationship (A. Parasuraman, Valaries A Zeitmal, 1994; Oh, 1999). Parasuraman et al (1985) indicate the relationship between service quality and customer satisfaction as “service quality is a global judgment, or attitude, relating to the superiority of the service, whereas satisfaction is related to a specific transaction”. In addition to the arguments between the two constructs, many arguments have been made to show the relation among service quality, customer satisfaction and customer loyalty. Findings indicate positive relationship among these constructs through the intensity varies from industry to industry. Numerous studies have attempted to find the interrelationships among service quality, customer satisfaction and customer loyalty in the banking industry (Karim, 2014). Almost all researches confirm that service quality and customer satisfaction are predictors of customer loyalty (Jacobucci et al., 2001; Kamariah et al., 2013; Karim, 2014). Studies indicate positive relationship among service quality, customer satisfaction and customer loyalty in the banking sector in (Ibrahim, 2015; Kamariah et al., 2013).

2.6 SERVICE QUALITY, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY IN ETHIOPIAN BANKING INDUSTRY

Despite the burgeoning of banking industry, there are few researches conducted on service quality, customer satisfaction and customer loyalty. The dearth of researches in the industry has made banks to offer the services intuitively. A few researches conducted in different parts of the country have been examined to have over view about the service quality, customer satisfaction and customer loyalty in the banking industry of the country

Table 1. summary of Empirical literatures

	Author/s	Banks	Findings	Model
1	Habtamu Mekonnen	Dashen Bank, Mekelle Area Bank	The findings indicate that customers were satisfied with tangibility and assurance dimensions of service quality; however, they were dissatisfied with reliability, responsiveness and empathy service quality dimensions of the bank.	SERVQUAL
2	Ubah Adem	Commercial Bank of Ethiopia and all private banks in Dire Dawa	The mean result reveals that private banks outperform public banks in terms of tangibles, reliability, responsiveness, assurance, empathy, effectiveness and price dimensions of service quality. Moreover, there are significant differences in perception between customers of the Ethiopian public and private banks regarding the responsiveness, assurance, empathy, effectiveness, and price dimensions as indicators of service quality.	BSQ
3	Dr. Yassin Ibrahim et al	Abyssinia bank Mekele Branch	The findings from the overall service quality (Tangibility, Reliability, Responsiveness, Assurance, and Empathy) shows that the majority of respondents were dissatisfied	SERVQUAL
4	Mesay Sata	Private banks in Hawassa	The study indicates that private banks scored better result in three dimensions (Tangible, Assurance and Reliability) of service quality but below average for responsiveness and empathy. Further, it is observed that strong relation among service quality, customer satisfaction and customer loyalty.	SERVPERF
5	Merish et al	Three private banks and commercial bank of Ethiopia in Addis Ababa	For all banks, service expectations were not matched by perceived performance. While there were only a few differences in service expectations between public and private banks, private banks were perceived to be relatively better in delivering service. The findings also indicate that perceived service quality falls short of customer expectations in all the five dimensions of service quality—tangibles, reliability, responsiveness, assurance and empathy—with the largest perception-expectation gap observed for the empathy dimension.	SERVQUAL

Source: Authors' own review

The findings in the table above indicate that the banking industry is not satisfying customers. Particularly, the responsiveness and empathy dimensions of service quality are below customers' expectation irrespective of ownership of the banks. However, in other dimensions of service quality, private banks surpass the public banks, mainly Commercial Bank of

Ethiopia. Further, it is observed that service quality, customer satisfaction and customer loyalty have strong correlation among themselves.

2.7 RESEARCH METHODOLOGY

This research is dominated by positivist view; it tests hypotheses developed with regard to service delivery, customer satisfaction and customer loyalty. Hence, it is predominantly quantitative in nature. Primary data were collected from customers of commercial banks using different parameters of service quality, customer satisfaction and customer loyalty models. Data were collected from customers of selected commercial banks in Ethiopia (Commercial Bank of Ethiopia, Dashen Bank, Awash International Bank, Oromia International Bank, Anbessa Bank). Customers were selected from some judgmentally selected branches of commercial banks from Arbaminch, Sodo, Shashemene, Hawassa, Adama, D/zeit and Addis Ababa.

A total of 330 were questionnaires with a quota of 90 respondents from Addis Ababa, 60 from Hawasa, 60 from Adama, 30 from Arba Minch, 30 from Soddoo, 30 from Shashamene and 30 from D/Zeit. However, at the end a total of 248 questionnaires were returned back and finally after data edit a total 2003 samples were used for the analysis. Data were collected using survey. Service quality and customer satisfaction were measured using the SERVQUAL model (5 dimensions) and customer loyalty was measured using 5 items Likert Scale questions adopted from Mohasan et al. (2011) and Dehghan and Shahin (2011) where 1 means strongly disagree and 5 means strongly agree. Both the English and Amharic (translated version of the questionnaire) were used for data collection in order to address language differences among regions and to expatriates such as Indian teachers and tourists.

The data were analyzed with the help of SPSS version 20. Both descriptive and inferential statistics were applied to analyze the data. Depending on the nature and the distribution of the data, t- test, ANOVA, regression and correlations were used to examine various dimensions of the construct.

3 RESULTS

3.1 RESULT

Three hundred thirty questionnaires were distributed and 203 were filled effectively and returned back; that makes the response rate 61.5 %. The respondents' composition was in tally with the market share of commercial banks in the country: 97(47.8%) were from CBE, 27(13.3%) were from AIB, 31(15.3%) respondents were from OIB, 24 (11.8%) were from Dashan Bank and 24(11.8%) were from LIB. In terms of marital status 111(55% were single, 86(42.8%) were married, 3(1.5%) were divorced and 1(0.5%) was widowed. In terms of education, 30(15%) were below high school, 30 (15%) were TVET/Diploma, 122 (61%) were first degree, 17 (8.5%) were masters degree, and 1 (0.5%) was PhD graduate. When it comes to type of employment 98(53.6%) were private employees, 50(27.3%) were government employees, 31(16.9%) were self-employed, and 4(2%) were working in different other organizations. Regarding the religion of the respondents, 101(50.8%) were Orthodox, 20(10.1%) were Catholic, 60(30.2%) were protestant and 14(7%) were Muslim.

3.2 RELIABILITY OF THE INSTRUMENTS

The instrument used for measuring the expected dimension, perceived dimensions and customer loyalty have reliabilities of 0.93, 0.935 and 0.7 respectively; which is acceptable when compared to standard Cronbach alpha coefficient (0.7).

3.3 SERVICE QUALITY

Service quality was measured using gaps in the five SERVQUAL dimensions. For this research, a threshold of 80% (4 and more out of 5) of the maximum was used to measure satisfaction and loyalty (Ferdous 2008 & Hasker, Sasser and Schlesinger, 1997). Accordingly, the perceived dimensions of the service fall slightly short of the expectations. The following table shows the gaps.

Table 2. service quality gap

Dimensions	Expectations	Perception	Gap score	Weightings	Weighted average
Tangibility	3.8239	3.6416	-0.182	20.12	-0.037
Reliability	3.8320	3.6012	-0.231	20.82	-0.048
Responsiveness	3.8933	3.6429	-0.250	21.00	-0.053
Assurance	3.9142	3.7303	-0.184	20.66	-0.038
Empathy	3.8163	3.5399	-0.276	18.08	-0.050
				Total	-0.225

The table shows that Commercial banks in Ethiopia were performing slightly below the expectations of their customers in all the five dimensions. All dimensions of quality have negative gap which shows banks have drawbacks in all dimensions of service quality. The examination of the value for each dimension indicates that the highest gap for empathy followed by responsiveness and reliability.

3.4 CUSTOMER SATISFACTION

The t-test indicates that customers are not satisfied in the services provided by both public and private banks ($t=-7.99$; $P=0.000$). The binomial test shows that 25% of customers are satisfied and 75% are not satisfied ($p\text{-value} = 0.000$) with tangibility dimension; 27 % of customers are satisfied and 73% not satisfied ($P\text{-value}= 0.000$) with reliability dimension; 29% of customers are satisfied and 71% are not satisfied ($p\text{-value} = 0.000$) with responsiveness; 33 % are satisfied and 67 % are not satisfied ($P\text{-value}= 0.000$) with assurance; and 23% are satisfied and 77% unsatisfied ($P\text{-value}= 0.000$) with empathy.

Table 3. satisfaction with service quality dimensions

		Binomial Test				
		Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
SATISFACTION WITH TANGIBILITY	Group 1	DISSATISFIED	153	.75	.50	.000
	Group 2	SATISFIED	50	.25		
	Total		203	1.00		
SATISFACTION WITH RELIABILITY	Group 1	DISSATISFIED	148	.73	.50	.000
	Group 2	SATISFIED	55	.27		
	Total		203	1.00		
SATISFACTION WITH RESPONSIVENESS	Group 1	SATISFIED	58	.29	.50	.000
	Group 2	DISSATISFIED	145	.71		
	Total		203	1.00		
SATISFACTION WITH ASSURANCE	Group 1	DISSATISFIED	137	.67	.50	.000
	Group 2	SATISFIED	66	.33		
	Total		203	1.00		
SATISFACTION WITH EMPATHY	Group 1	SATISFIED	46	.23	.50	.000
	Group 2	DISSATISFIED	157	.77		
	Total		203	1.00		

Source: own Survey, 2016

Despite customers of both categories are not satisfied with the service provision, the two independent sample t-test indicates that private commercial banks are better than public bank(CBE) in terms of all the five dimensions of service quality($t= -2.702$, $P\text{-value}= 0.007$ for tangibility; $t= -3.148$ $P\text{-Value}= 0.002$ for reliability; $t= -2.681$, $P\text{-value} = 0.08$ for responsiveness; $t= -3.057$, $P\text{-Value}= 0.003$ for assurance; and $t = -3.303$; $P\text{-Value} = 0.001$ for Empathy).

Table 4. Public and private bank comparison of satisfaction with the various dimensions of service quality

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
Overall Customer Satisfaction	Equal variances assumed	.006	.941	-3.541	201	.000	-.31835	.08989	-4.9561	-.14110	
	Equal variances not assumed			-3.546	200.320	.000	-.31835	.08977	-4.9537	-.14134	
Satisfaction with Tangibility	Equal variances assumed	.003	.954	-2.702	201	.007	-.28603	.10586	-4.9478	-.07729	
	Equal variances not assumed			-2.698	197.894	.008	-.28603	.10603	-4.9514	-.07693	
Satisfaction with Reliability	Equal variances assumed	.005	.945	-3.148	201	.002	-.31825	.10110	-5.1760	-.11890	
	Equal variances not assumed			-3.149	199.606	.002	-.31825	.10107	-5.1756	-.11894	
Satisfaction with Responsiveness	Equal variances assumed	.675	.412	-2.681	201	.008	-.30320	.11309	-5.2619	-.08021	
	Equal variances not assumed			-2.689	200.918	.008	-.30320	.11274	-5.2551	-.08089	
Satisfaction with Assurance	Equal variances assumed	.634	.427	-3.057	201	.003	-.33739	.11038	-5.5503	-.11974	
	Equal variances not assumed			-3.056	199.244	.003	-.33739	.11040	-5.5509	-.11968	
Satisfaction with Empathy	Equal variances assumed	.375	.541	-3.303	201	.001	-.34690	.10501	-5.5397	-.13983	
	Equal variances not assumed			-3.315	200.973	.001	-.34690	.10465	-5.5325	-.14054	

Source: own survey 2016

3.5 CUSTOMER LOYALTY

Binomial test shows that 74% of the customers are not loyal and 26 % are loyal (P-value= 0.000). Two sample t-test indicates that the customer loyalty of private banks in Ethiopia is greater than that of CBE (t= -2.19; P-Value= 0.030).

Table 5. Customer loyalty

Binomial Test						
		Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Customer Loyalty	Group 1	NOT LOYAL	151	.74	.50	.000
	Group 2	LOYAL	52	.26		
	Total		203	1.00		

Source: own survey

3.6 SERVICE QUALITY, CUSTOMER SATISFACTION, CUSTOMER LOYALTY AND DEMOGRAPHICS

The background of customers has effect on the service quality perception. Though service quality perception is not affected by the gender of customers (T= 0.825; p, 0.410), customer loyalty is not affected by gender (T= -0.208; P, 0.835), customer satisfaction is not affected by gender (T= 1.232; P, 0.219). In terms of marital status there is no significant difference in

service quality among categories (F=0.424; P, 0.736), there is no significant difference in customer satisfaction among categories (F= 2.071; p, 0.105), there is no significant difference in customer loyalty among categories (F=1.88; P, 0.135). In terms of education, there is significant different in customer satisfaction among groups (F= 7.24; P, 0.000); the post-hoc analysis indicated that customer satisfaction of customers with high school education background is significantly lower than satisfaction of customers with bachelor degree education background (Mean difference= -0.499; P, 0.01); customers with high school education background are less satisfied than those with masters and above (Mean difference = -0.736; P, 0.01). However, there is no sufficient evidence that education background affects service quality perception (F=2.7; p, 0.05). In addition, the analysis indicates that there is significant difference among customers with different education background in terms of customer loyalty (F= 3.25; P, 0.023); post-hoc analysis indicates that customers with high school education background are less loyal than customers with masters and above education background. In addition, it is found that type of employment has no effect on service quality perception (F=0.602; P, 0.615), customer satisfaction (F=0.37; P, 0.775) and customer loyalty (F= 0.5; P, 0.680).

3.7 RELATIONSHIP AMONG SERVICE QUALITY, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY

Service quality and customer satisfaction are statistically significantly related (r = 0.710; P-value = 0.000); service quality and customer loyalty are statistically significantly correlated (r=0.398; p-value = 0.000) and satisfaction and customer loyalty are statistically significantly (r = 0.597; P-value = 0.000).

Table 6. the relationship among service quality, customer satisfaction and customer loyalty

		Correlations		
		Customer Satisfaction	Customer Loyalty	Service quality
Customer Satisfaction	Pearson Correlation	1	.597**	.379**
	Sig. (2-tailed)		.000	.000
	N	203	203	203
Customer Loyalty	Pearson Correlation	.597**	1	.244**
	Sig. (2-tailed)	.000		.000
	N	203	203	203
Service quality	Pearson Correlation	.379**	.244**	1
	Sig. (2-tailed)	.000	.000	
	N	203	203	203

** Correlation is significant at the 0.01 level (2-tailed).

Source: own survey

3.8 EFFECT OF SERVICE QUALITY ON CUSTOMER LOYALTY

Regressing customer loyalty on service quality indicated that Reliability (β= 0.216; P-value = 0.004); and Empathy (β= 0.150; P-Value= 0.024) are predictors of customer loyalty. The other three dimensions turned out to be poor predictors of customer loyalty.

Table 7. effect of service quality dimensions on customer loyalty

		Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.680	.051		72.579	.000		
	Reliability	.265	.072	.250	3.660	.000	1.000	1.000
2	(Constant)	3.710	.052		71.462	.000		
	Reliability	.216	.075	.204	2.885	.004	.917	1.091
	Empathy	.150	.066	.160	2.272	.024	.917	1.091

a. Dependent Variable: Customer Loyalty

Source: Own survey

3.9 EFFECT OF CUSTOMER SATISFACTION ON CUSTOMER LOYALTY

Regression analysis indicated that satisfaction with tangibility ($\beta=0.186$; P-Value= 0.012); satisfaction with reliability ($\beta=0.221$; P-Value= 0.017); and satisfaction with responsiveness ($\beta=0.231$; P-Value = 0.017) significantly predict customer loyalty.

Table 8. effect of satisfaction with service quality on customer loyalty

Model		Coefficients ^a						Collinearity Statistics	
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF	
		B	Std. Error	Beta					
1	(Constant)	1.757	.208		8.431	.000			
	Satisfaction with reliability	.517	.057	.541	9.118	.000	1.000	1.000	
2	(Constant)	1.504	.211		7.144	.000			
	Satisfaction with reliability	.316	.074	.331	4.265	.000	.545	1.835	
3	Satisfaction with responsiveness	.268	.067	.312	4.024	.000	.545	1.835	
	(Constant)	1.305	.220		5.941	.000			
	Satisfaction with Reliability	.221	.081	.231	2.731	.007	.443	2.258	
	Satisfaction with Responsiveness	.231	.067	.268	3.438	.001	.522	1.917	
	Satisfaction with Tangibility	.186	.069	.203	2.717	.007	.570	1.756	

a. Dependent Variable: Customer Loyalty
Source: own survey

3.10 THE MEDIATION EFFECT OF CUSTOMER SATISFACTION ON THE RELATIONSHIP BETWEEN SERVICE QUALITY AND CUSTOMER LOYALTY

The mediation effect of customer satisfaction on the relationship between service quality and customer loyalty examined and the finding indicate that customer satisfaction mediates the relationship between service quality and customer loyalty. Despite there is positive correlation between service quality dimensions and customer loyalty, it is absolutely mediated by customer satisfaction with the respective dimensions (β -value= 0.223: p, 0.010 for tangibility; β -value =0.241: P, 0.001 for reliability; β -value=0.296: p, 0.002 for responsiveness; β -value=0.253: p, 0.002 for Assurance; and β -value=0.206: p, 0.002 for empathy). Further, the effects of all dimension of service quality on customer loyalty are mediated by customer satisfaction. This indicates that customer satisfaction plays paramount role in realizing customer loyalty.

Table 9. mediation effect of customer satisfaction on the relationship between service quality and customer loyalty

Independent variable	Mediator	Dependent variable	Standardized direct effect (β)	P-Values	Standardized indirect effect	P-value
Tangibility	Satisfaction with tangibility	Customer loyalty	-0.120	0.070	0.223	0.001
Reliability	Satisfaction with Reliability	Customer loyalty	-0.080	0.203	0.241	0.001
Responsiveness	Satisfaction with Responsiveness	Customer loyalty	-0.145	0.030	0.296	0.002
Assurance	Satisfaction with Assurance	Customer loyalty	-0.129	0.091	0.253	0.002
Empathy	Satisfaction with Empathy	Customer loyalty	0.081	0.313	0.206	0.002

Source: own survey

4 DISCUSSION, CONCLUSION, AND RECOMMENDATION

4.1 DISCUSSION AND CONCLUSION

The research concludes that all commercial banks under investigation marginally fall short of the expectation of their customers in all service quality dimensions assessed. Moreover, the study revealed that customers are not satisfied with the following dimension of service delivery: tangibility, reliability, responsiveness, assurance, and empathy. A careful inspection indicated that customers of private banks reported higher satisfaction level as compared to commercial bank of Ethiopia. The findings are in agreement with the latest findings from researches on commercial banks in Ethiopia by Ubah (2015) and Mersha et al (2012). However, against the findings of Habtamu(2015), this research identified that none of the service quality and customer satisfaction dimensions scored positive gap. Despite various models including SERVQUAL were applied in the previous studies, all findings unanimously indicate the better performance of private banks compared to public banks (Commercial Bank of Ethiopia). In the same way, in line with this research, previous researches indicated that both private and public banks perform below the expectation of customers.

This research identified significant difference among different education categories though other demographic backgrounds have no significant difference regarding service quality perception, customer satisfaction and customer loyalty. However, the finding regarding different education categories went against the previous findings. People with lower educational background are found to be less satisfied with service quality and less loyal. This findings is also against the logic which conceptualizes educated people have higher expectation of service quality than less educated; and hence less satisfaction is expected from more educated people.

With regard to customer loyalty, the study concludes that the customers of Commercial banks in Ethiopia are not loyal. The study further reveals that the defection probability of CBE is greater than that of private commercial banks.

Reliability and empathy are found to have significant effect on customer loyalty while the other dimensions of the service quality are not good predictors of customer loyalty. When it comes to satisfaction, tangibility, reliability, and responsiveness dimensions are good predictors of customers' loyalty but the remaining dimension lack significant prediction power.

Even though there is positive correlation between service quality and customer loyalty, customer satisfaction mediates the relation significantly. Hence, the customer satisfaction is the main factor that affects customer loyalty when the relation among the constructs comes into curiosity. The relationships between all service quality dimensions and customer loyalty are also mediated by customer satisfaction. This finding is in tally with previous researches by Lee(2013), Mosahab et al.(2010) and by Caruana(2002).

4.2 RECOMMENDATIONS

It is recommended that Commercial banks in Ethiopia have to improve the customer satisfaction and customer loyalty by improving the tangibility, reliability, responsiveness, assurance and empathy dimensions of the service they provide. It requires giving attention to individual interest and it is better to move from mass marketing to customer-oriented marketing which favours individualized treatment. Further, it is better to give due attention to less educated people because, through it requires further investigations, people with lower education are disappointed with the banks' service which shows banks give more attention to educated people than less educated people. Improving the service quality can be done by increasing the perceived service performance. Particularly it is better to improve the empathy and responsiveness dimensions of service quality. Such improvements can be done by giving training to customer service officers and tellers. Further, it possible to change the current marketing technique which afflicted with mass marketing to differentiated marketing technique. In addition, the current marketing technique unnecessary inflates customers' expectation which resulted in negative service quality gap.

4.3 FUTURE RESEARCH DIRECTION

The role banks in development of a country though saving mobilization and credit provision is not questionable. Banks in general and commercial banks in particular are responsible to mobilize the money required for investment in an economy. To raise the saving amount, banks need to attract and retain customers. Providing quality service attracts and retains customers.

It is better to conduct this type of research in other parts of the country. This study used only few commercial banks in selected towns in southern and the central part of the country to explore the opinion of customers about service quality, customer satisfaction and customer loyalty. Further, because of financial and time constraints, this research took only few branches of commercial bank of Ethiopia and selected private commercials. However, to formulate a policy framework for

the industry in general, it would have been good to conduct such an assessment in the entire country. Further, it is better to conduct research using the bank employees' opinion to triangulate the findings as some of the constructs directly deal with the employees. Moreover, different model other than ServQual can be used to assess the service quality, customer satisfaction and loyalty. In addition some findings in this research require further investigation because the findings are contradictory to previous findings and the logic behind education and customer expectation.

REFERENCES

- [1] A. Parasuraman, Valaries A Zeitzmal, L. L. B. (1994). Alternative Scales for Measuring Service Quality- A Comparative Assessment Based on Psychometric and Diagnostic Criteria.pdf.
- [2] Adem, U. (2015). A Study on Services Quality of Commercial Banks in Dire Dawa , Ethiopia : A Comparative Study of Public and Private Banks, 7(28), 73–78.
- [3] Asubonteng, P., Mccleary, K. J., & Swan, J. E. (1996). SERVQUAL revisited : a critical review of service quality, 10(6), 62–81.
- [4] Awoke, H. M. (2015). Service Quality and Customer Satisfaction : Empirical Evidence from Saving Account Customers of Banking Industry, 7(1), 144–165.
- [5] Bahia, K., & Nantel, J. (2000). A Reliable and Valid Measurement Scale for the Perceived Service Quality of Banks, (March).
- [6] Caruana, A. (2002). Service Loyalty : The Effects of Service Quality and the Mediating Role of Customer Satisfaction Service loyalty. *European Journal of Marketing*, 36(7/8).
- [7] Caruana, A. (2016). Service Loyalty : The Effects of Service Quality and the Mediating Role of Customer Satisfaction Service loyalty, (March).
- [8] Du, Y., & Tang, Y. (2014). A Literature Review on the Relationship Between Service Quality and Customer Loyalty, 3(3), 27–33.
- [9] Fonchamnyo, D. C. (2013). Customers ' Perception of E-banking Adoption in Cameroon : An Empirical Assessment of an Extended TAM, 5(1), 166–176.
- [10] Grönroos, C. (1994). to Service Management A Management Perspective for the Age of Service Competition, 5(1), 5–20.
- [11] Hollowell, R. (1996). The relationships of customer satisfaction , customer loyalty , and profitability : an empirical study, 7(4), 27–42.
- [12] Ibrahim, Y. (2015). Analysis of Factors Affecting Service Quality : A Survey Study in Bank of Abyssinia Alula Abanega Branch , Mekelle Ethiopia, 4(3), 36–43.
- [13] Jacobucci, D., Ostrom, A., & Grayson, K. (2001). Distinguishing Service Quality and Customer Satisfaction : The Voice of the Consumer, 4(3), 277–303.
- [14] Kamariah, N., Mat, N., Mujtaba, A. M., Al-refai, A. N., Badara, A. M., & Abubakar, F. M. (2013). Direct Effect of Service Quality Dimensions on Customer Satisfaction and Customer Loyalty in Nigerian Islamic, 3(1), 6–11.
- [15] Karim, R. Al. (2014). CUSTOMER SATISFACTION ON SERVICE QUALITY IN PRIVATE COMMERCIAL, 2(2), 1–11.
- [16] Khafafa, A. J., & Shafii, Z. (2013). Measuring the Perceived Service Quality and Customer Satisfaction in Islamic Bank Windows in Libya Based on Structural Equation Modelling (SEM), 2, 56–71.
- [17] Koskosas, I. (1995). THE PROS AND CONS OF INTERNET BANKING : A SHORT REVIEW, 49–58.
- [18] Law, S. H., & No, W. P. (2004). D EPARTMENT OF E CONOMICS F INANCE , I NSTITUTIONS AND E CONOMIC G ROWTH Panicos Demetriades , University of Leicester , UK, (04).
- [19] Lee, H. S. (2013). Major Moderators Influencing the Relationships of Service Quality , Customer Satisfaction and Customer Loyalty. *Asian Social Science*, 9(2), 1–11.
- [20] Malik, S. U. (2012). Customer Satisfaction , Perceived Service Quality and Mediating Role of Perceived Value, 4(1), 68–76.
- [21] Marketing, I. (2007). Customer ' s perception on usage of internet banking, 3(4), 67–73.
- [22] Mersha, T., Sriram, V., Yeshanew, H., & Gebre, Y. (2012). Perceived Service Quality in Ethiopian Retail Banks. *Thunderbird International Business Review*, 54(4), 551–565.
- [23] Mosahab, R., Mahamad, O., & Ramayah, T. (2010). Service Quality , Customer Satisfaction and Loyalty : A Test of Mediation. *International Business Research*, 3(4), 72–80.
- [24] Oh, H. (1999). Service quality , customer satisfaction , and customer value : A holistic perspective, 18.
- [25] Oliver, R. L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions, 17(4), 460–469.
- [26] Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). Model Service Its Quality and Implications for Future, 49(4), 41–50.
- [27] Ragavan, N., & R.Mageh. (2013). A Study on Service Quality Perspectives and Customer Satisfaction in New Private Sector Banks, 7(2), 26–33.

- [28] Sakhaei, S. F., & Afshari, A. J. (2014). The Impact of Service Quality on Customer Satisfaction in Internet Banking, *9*, 33–40.
- [29] Shahin, A. (n.d.). SERVQUAL and Model of Service Quality Gaps : A Framework for Determining and Prioritizing Critical Factors in Delivering Quality Services.
- [30] Shaikh, M. A. (2014). Ethiopian Banker ' s Perception of Electronic Banking in Ethiopia – A Case of Adama City, *4(9)*, 1–7.
- [31] Shanka, M. S. (2012). Bank Service Quality , Customer Satisfaction and Loyalty in Ethiopian Banking Sector, *1(1)*, 1–9.
- [32] Shimp, T., & Sharma, S. (1987). Consumer Ethnocentrism: Construction and Validation of the CETSCALE. *Journal of Marketing Research*, *24(3)*, 280–289.
- [33] Siddiqi, K. O. (2011). Interrelations between Service Quality Attributes , Customer Satisfaction and Customer Loyalty in the Retail Banking Sector in Bangladesh. *International Journal of Business Management*, *6(3)*, 12–36.
- [34] Suki, N. M., & Suki, N. M. (2013). Service Quality vs . Customer Satisfaction : Perspectives of Visitors to a Public University Library, *7(2)*, 338–342.

Pragmatic Analysis of Some Expressions of Politeness in Kihavu (D52/J53)

Byamungu Byandima David

English Department, Letters and Humanities, ISP-IDJWI, DR Congo

Copyright © 2016 ISSR Journals. This is an open access article distributed under the *Creative Commons Attribution License*, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: This study investigates the pragmatic expressions of politeness in Kihavu. It analyzes pragmatically different expressions of politeness in accordance with the Havu culture and custom. To achieve this research, I used the documentary research, the questionnaire, the observation of gestures of politeness that accompany polite utterances, and the interviews, especially with mature speakers of Kihavu. After the analysis, the findings have revealed that polite utterances in Kihavu are culture-specific, i.e. they are specific to the Havu culture and custom, and most of them are partially gestural. Furthermore, the investigation has shown that Havu people do not use expressions of politeness randomly insofar as they have some culture-oriented goals, intentions, purposes and decisions while uttering them.

KEYWORDS: the bald on-record strategy, off-record indirect strategy, positive politeness, negative politeness, cooperative principle (cp), politeness principle (pp).

SYMBOLS: ↑h: desirable for the hearer/addressee, ↓h: undesirable for the hearer, X: utterance, / rising tone, \ falling tone.

1 INTRODUCTION

The subject matter of pragmatic theory is ostensibly linguistic communication, much of it deals, in fact, with the more general problem of human interaction, which is independent of linguistic considerations and of which linguistic communication is just a particular manifestation (T. Reinhart 1978:53).

In fact, the pragmatic analysis of Havu expressions of politeness falls in the scope of socio-linguistics. This area has tremendously interested linguistic-minded researchers such as Geoffrey Leech (1983:1) who considers this study as a way of getting meanings of utterances in their context, i.e. how language is used in communication or in different situations and interactions, Grice (1981:13) who gives the maxims that must be observed in conversational exchanges, Searle (1979:16) who carried out some research on speech acts and recent linguistics where he applied Grice's maxims to certain grammar notions. Besides, Belinda Hill (2008:2) says that pragmatics refers to social language skills we use in our daily interactions with others. They include what we say, how we say it, our body language and whether it is appropriate to a given situation.

Analyzing expressions of politeness in Kihavu in a pragmatic way necessitates knowing the ethno-pragmatic mechanisms that govern those expressions. It requires the access to cultural norms in uttering them, the context in which they are uttered, the rules observed while producing them and the people to whom they are addressed.

1.1 PROBLEM STATEMENT

The attitudes of language speakers to utter or hold any kind of language or speech regardless of the person being addressed to, tremendously impedes the communicational process and therefore considered as a social gaffe. In this perspective, language appropriacy is paramount. The problem is thus; to know whether the expressions of politeness uttered by different categories of Bahavu (native speakers of Kihavu) are appropriate in the situations they are uttered, whether they convey some crucial linguistic and /or cultural meanings of politeness, or whether they are uttered in respect of specific rules or principles of politeness.

1.2 A GLIMPSE ON KHAVU

Kihavu is a Bantu language classified in the linguistic zones D52 by Guthrie and J53 by Meeussen. It is the only ethnic language spoken on the Idjwi Island with its three dialects namely the Nyeju (ekinyeju), the Bindi (ekibindi), and the Buzi (ekinyabuzi). This investigation is concerned with the Nyeju, a dialect spoken on the area extending from Boza, Mugote, up to the northern part of Idjwi bordered in the west by Kalehe Administrative Territory.

1.3 RESEARCH QUESTIONS

This analysis investigates on how politeness is pragmatically handled by native speakers of Kihavu through the daily use of Kihavu, their native language of communication. The following are the questions that govern this research:

- How do the Bahavu (native speakers of Kihavu) view politeness?
- What are the circumstances in which politeness is expressed and mostly needed in Havu culture and language?
- How do native speakers of Kihavu proceed to express politeness in front of people having different age and status?
- What do the rules and/or principles of politeness constitute in Kihavu?

1.4 ASSUMPTIONS/ HYPOTHESES

The following hypotheses can stand for provisional answers to the above questions:

- Politeness is vital in the Havu culture. Havu language speakers, like some other language speakers, have their own ways of expressing politeness which are inherent to their socio-cultural and geographical realities. However, some Havu language speakers who are not culturally trained in the Havu language (Kihavu) tend to use any kind of expression towards any kind of person regardless of the age, social status, and the like. Such language users create a kind of communication failure so that they need to be trained consequently.
- In the Havu culture, politeness is needed in many situations. It can, for example, be expressed during people's greetings, suggestions, but also during request with intentional purposes.
- While expressing politeness, the Bahavu utter a few expressions to mean much. In some circumstances, they even use gestures while uttering these expressions to show how polite they are towards the addressee(s).
- In the Havu culture, politeness constitutes the equilibrium, the friendly relations among people and the humble attitude to people on power or in higher position in the culture.

1.5 RESEARCH OBJECTIVES

This work aims at analyzing pragmatically the different expressions of politeness as used in Kihavu, find their appropriacy in terms of the type of politeness used, and point out the dominant and broken maxims of CP and PP, classify them according to people who produce them, speculate whether they should be used in such or such contexts, and finally draw some conclusions related to their context of use.

1.6 THEORETICAL FRAMEWORK

To make the present investigation much clearer, it is worth stating its theoretical setting as well as the definition of the key concepts which are crucial and that pave the way to the understanding of the whole work. They are listed hereafter: Politeness, Rhetoric, Positive politeness (Pp), Negative politeness (Np), the Bald On-Record Strategy and the Off-Record Indirect Strategy.

1.6.1 POLITENESS

In principle, using a language is an orderly process whereby people talk to others with regard to their age, social status or rank, the circumstances in which they find themselves, the language context, and more importantly the language social functions. When Havu people use their language in expressions of politeness, they fairly well implement some language norms taking into account important factors such as age, sex, social rank/ status, circumstances and language functions which assuredly make Kihavu a coherent code. It is then in this perspective that I paid heed to the pragmatic analysis of expressions of politeness in Kihavu.

Macmillan English Dictionary for Advanced Learners (2002:1090) defines politeness as a behavior which follows all the usual rules of the society. It is also known as courtesy or courteousness, i.e. the formal politeness used in social situations. Politeness is the good manner and respect for the feelings of others that is socially correct behavior (Oxford Advanced Learners Dictionary of Current English, 1122). Politeness is a redressive action taken to account for the balance between communication and conversational strategies (Penelope, 1968:4). Furthermore, politeness is the act of showing good manners towards others, as in behavior, speech, etc... (<http://www.CognitiveLinguistics.org/reviews/watts>).

In expressing politeness, four strategies are distinguished for the main purpose of dealing with Face Threatening Acts (FTAs). Face Threatening Acts are acts that infringe on the hearer's need to maintain his / her self esteem, and his/her need to be respected (<http://www.CognitiveLinguistics.org/reviews/watts>). The four types of politeness strategies as described by Brown and Levinson, sum up human politeness behavior. These strategies are found hereafter: the positive politeness, the negative politeness, the Bald On-Record Strategy, and the Off-Record Indirect Strategy.

1.6.1.1 THE POSITIVE POLITENESS STRATEGY

In this type of strategy, the speaker recognizes that the hearer has a desire to be respected. It also confirms that the relationship between the speaker and the hearer is friendly and expresses group reciprocity. For instance, (Kihavu): **Kwàkàbà kwinjà nkólés'ákéři kàwè?** i.e. "Is it ok if I use your knife? / I wish I used your knife".

In the above utterance, the speaker asks the hearer for the permission to use the latter's knife taking into account his/her face though the speech in question is friendly.

1.6.1.2 THE NEGATIVE POLITENESS STRATEGY

It is similar to Positive Politeness in that the speaker recognizes the hearer's face, but to some extent; the speaker is assumed to be in some way imposing on the hearer. For instance, (Kihavu): **òrhàkántábéré n'ákéři kàwè?**, i.e. "Wouldn't it be a good idea to use your knife?" / "Wouldn't you help me with your knife?" In this utterance, the speaker politely addresses a negative utterance to the hearer considering his / her face; but seems to show that using a knife may be his right.

1.6.1.3 THE BALD ON-RECORD STRATEGY

It is the one which provides no effort to minimize threats to your hearer's face. For instance, the statement (Kihavu): **inshóndér'ènkólés'ákéři kàwè?** "I want to use your knife". As it can be obviously remarked in this utterance, the speaker asks for permission to the hearer in a seemingly polite way, but he does not take care of the self-esteem that the hearer is supposed to display in his/her family or society.

1.6.1.4 THE OFF-RECORD INDIRECT STRATEGY

This strategy consists of taking some of the speaker's pressure off, i.e. it discards from the speaker any kind of pressure that can have a negative effect on the hearer's face. For instance, a person who has, on purpose decided not to let the hearer guess directly what he/ she is asking can simply say: (Kihavu) **Ákéři lyàkàbér'éjibù**, i.e. " a knife would be the answer". For this particular way of expressing politeness, the speaker tries not to directly impose by asking a knife, but looks for an indirect way which will make the hearer be aware of the need being expressed.

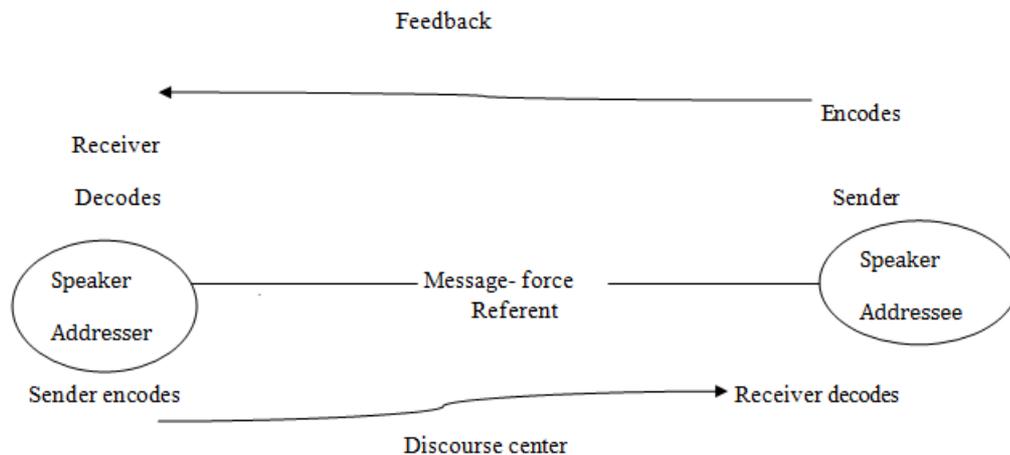
1.6.2 FORCE OF HAVU EXPRESSIONS OF POLITENESS

The pragmatic force of Havu expressions of politeness depends on how consistent the speaker utters these expressions and how the hearer interprets the message. These expressions are mainly socio-deictic, i.e. the speaker uses a powerful expression of politeness when the hearer is of a high social rank and uses an ordinary expression, even the Bald On-Record Strategy depending on the lower status of the hearer.

1.6.2.1 THE SPEAKER OR THE ADDRESSER

He is the one who manoeuvres an expression of politeness depending on the hearer being addressed to. Whichever variety of Kihavu he uses, i.e. (formal, informal, neutral, colloquial, or ordinary spoken Kihavu); he/ she needs to have sufficient cultural background knowledge in the language so that he/ she cannot offend the hearer's face. Sometimes the

hearer can become the speaker in polite communication exchanges as it can be seen in the following chart of communication:



For example:

- Speaker A: Nàkàsimiré ngéré wálihà, “Your majesty, I would like to have the way free”.
- Speaker B: Néchimwáná wáni, i.e. “You can pass my child”.

From the above two utterances, we notice that (A) and (B) are at the same time speakers and hearers, because they have to consider not only each other’s face, but also the Interpretation of the heard utterance.

1.6.2.2 THE HEARER OR THE SPEAKER

In order to see how an utterance can have its force in Kihavu focusing on the addressee, let us consider (1) and (2) here below:

(1) Rhwàlámúsiz’ómúkùlù, i.e. “Our greetings, dear chief”.

(2) Rhwàciré búfi Nnákùndò, i.e. “We humble ourselves, dear land owner!”

These two utterances used to greet people of a high social rank have two different pragmatic forces as far as the addressee is concerned. In (1) the speaker is in presence of any authority or respectful Havu person who may or not be in charge of judging or providing people with hints and important life guide lines. In (2) however, the speaker is in presence of the representative of the Havu culture and custom. So, in terms of force, (2) is said to be more powerful than (1) in reference to the addressee concerned.

1.6.3 RHETORIC

The term rhetoric traditionally refers to the study of the effective use of language in communication, i.e. the art of using language skillfully for persuasion, public speaking and literary expression (Leech 1983:15). As far as pragmatics is concerned, the term rhetoric is considered as a goal-oriented speech situation in which the speaker uses language in order to produce a particular effect in the mind of the hearer. The term rhetoric is two-fold: the interpersonal and the textual rhetoric. Each of the two rhetorics consists of a set of maxims and sub-maxims. In this investigation, it is the interpersonal rhetoric that I have resorted to for various comments and analyses.

Grice (1975:44) apart from showing conversational implicatures, he also gives the maxims of the interpersonal rhetoric to be observed in conversational exchanges. He shows the three principles of the interpersonal rhetoric namely the Cooperative Principle (CP), the Politeness Principle (PP) and the Irony Principle (IP) with their maxims and sub-maxims. The present research is mainly focused on the first two principles of the Interpersonal Rhetoric (IR). The CP comprises the quantity, quality, relation and manner maxims whereas the PP is made of tact, generosity, approbation and modesty maxims. The choice of the aforementioned principles was dictated by the fact that we realized that they work hand in hand pragmatically. While expressing politeness, cooperation is of paramount importance, especially in the Havu culture and custom.

2 WORKING POLICY

To carry out this research, I resorted to various methods, approaches, techniques and processes during the data gathering / collection and analysis.

2.1 DATA COLLECTION TECHNIQUES

To have access to the necessary data, I firstly resorted to the library research which was based on the intensive reading of books pertaining to pragmatics and expression of politeness, theses, magazines, articles and other written sources. The library or documentary research requires the consultation of official and private documents. The researcher does not exercise any control on the way those documents have been established but he must rather select those that pertain to his research. Furthermore, it allows the researcher not only to exploit the information of people as a source in order to actually elaborate the problem statement, formulate hypotheses better and choose the techniques of treatment of the data well, but also to facilitate the interpretation of available findings(Gratwitz and Pinto, 1967:19). It is worth noting that the use of this documentary research enabled me to have broad knowledge on the topic under study. Secondly, I had recourse to the ethnographical research. This consisted of getting into contact with my respondents. According to Mulamba (2009:7) in his lecture notes of "Research Methods in Linguistics for Graduate Students", states that this particular type of research is based on the use of informants or respondents, subjects or interviewees. He pursues saying that this contact with respondents can either be oral or written. Thirdly, I both used a questionnaire and interviews. Kotari (1985:42) asserts that scientific readers wish to be given details about the way the study was carried out, especially on whether the data were collected through a questionnaire or an interview, what were the questions and how they were selected. As for the present article, I employed a questionnaire in which there were tasks of elicitation procedure. Corder (1973:61) defines the elicitation procedure as "any procedure which causes a learner or a respondent to make judgment about something and provoke him into generating a linguistic response".

My choice of a questionnaire sides with Coleman and Douglas (2001:21). They state in their articles on data collection methods in Applied Linguistics that "through a questionnaire the researcher is able to collect data regarding information related to his/her subjects' communicative behavior that they perform". It is in this perspective that I had to make open-ended questions in accordance with the principle of pragmatic consistency so that my respondents could deal with them pragmatically. That always enabled the addressee to make what he/she believes to be a consistent set of information into account (Adler, J, 1980:73). Finally, I used structured and unstructured interviews, especially when I wanted to get data from illiterate speakers of Kihavu.

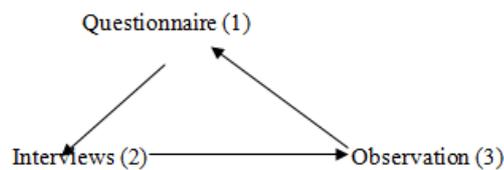
2.2 METHODS OR APPROCHES OF DATA ANALYSIS

The following are the methods and approaches I used to analyze some Havu polite utterances pragmatically: the socio-linguistic approach, the pragmatic approach, and the analytical approach. The first approach enabled me to study the social factors in Kihavu. Mulamba (2009:26) states that "social factors in relation with language can be for instance, the education level and type of education, age, ethnic origin and the like". He pursues saying that they can also be either macrosocio-linguistics (language planning, language policy, or language attitudes) or microsocio-linguistics (interpersonal meaning making). The present study is both macrosocio-linguistics and microsocio-linguistics in that it first of all deals with the attitudes that Havu people (people speaking Kihavu) display while expressing politeness. Secondly, it looks into the possible relationships among the Bahavu in terms of the meanings conveyed through politeness. The second approach which proves to be the most important one helped me to pragmatically and validly interpret and provide the meanings to different expressions politeness. The pragmatic approach is concerned with the hearer's meanings, i.e. how the hearer interprets the message. It is associated with speech acts and cultural knowledge, and is mainly important in culture-oriented topics such as speech acts, use of gestures, ceremonies etc. (Mulamba, 2009:4). As for Leech, G. (1983:12), "thanks to the pragmatic approach; the utterances meanings are looked at in different situations". The third and last approach helped quite a lot in analyzing Havu expressions contextually and culturally. Adler. (1980:73), argues that "analyzing utterances requires their contextual interpretation taking into consideration certain pragmatic principles". In this view point, my analysis accounted not only for the context in which expressions are used but also the pragmatic principles that govern Havu expressions of politeness.

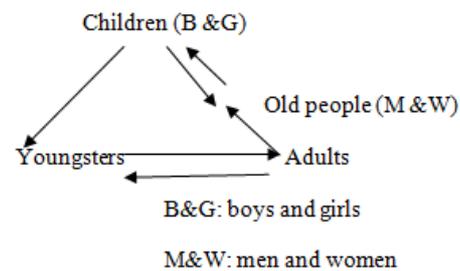
2.3 RESEARCH PROCESSES

According to Mulamba (2009:11), processes are steps, actions or series of actions that the researcher has to go through in order to reach a given result. Hereafter is the way I made triangulations of techniques and informants to access the data I needed for this work.

(A) Triangulation of techniques



(B) Triangulation of informants



The above triangulations overtly show how the techniques were used and how I resorted to a group of Havu people having a given age before moving to the next group and sometimes came back to the former group whenever the answers I got were not fully satisfactory. That is especially found in (a) ↔ (d) and (b) ↔ (c).

3 DATA PRESENTATION AND ANALYSIS

To pragmatically and validly proceed with the analysis of Havu expressions of politeness, I had to identify (1°) the type of politeness found in the expression under analysis and its dominant maxims of the CP and PP, (2°) the meanings they convey to the hearer, (3°) the context in which they are used; (4°) the intention of the speaker and the addressee's attitude. It is by following these steps rigorously that I happened to draw some conclusions. Sustaining this point of view, Mulamba (2009:17), shows that "before reaching a conclusion, a researcher has to analyze available and reliable facts or pieces of information. Further, Adler, J., (1980:73) in his turn argues that "analyzing utterances requires their contextual interpretation taking into consideration certain pragmatic principles". This analysis accounted mainly for the culture in which polite utterances are produced and the principles that govern pragmatics and politeness.

3.1 EXPRESSING POLITENESS AMONG PEERS

These expressions are much more concerned with people having the same age or sharing the same social rank and professional status.

3.1.1 GREETINGS

(1) A: Nàlámúsizè múzáwée! → B: Néchi múzá wée!
 "I have greeted, mister" "yes, mister"

Índé wàlámúsizè? "Who have you greeted?"

(2) A: Máhyó múzá wée! → B: Néchi múzá wée!

(3) A: Òkóméré sí wáni? → B: Néchi wáni

"My friends, brother..., are you all right?" "Yes, my friend, brother..."

In the above three utterances, the speaker resorts to the Bald On-Record Strategy of politeness with the assumption that he/she cannot devote much energy or effort of politeness to somebody of his age or he/she is familiar to. In fact, in utterance (1), the literal translation being "I have greeted, mister", the utterer does not give the right amount of information that the listener or hearer needs. For that reason, he overtly breaks the maxim of quantity, because even though he has the goal to convey his greetings to the addressee, he/she does not give much precision about the person he/she wants to greet. This can also lead to ambiguity in the sense that the person to be greeted is not clearly stated; hence, another breach based on the manner maxim. The interpretation of this utterance by the hearer is two-fold. First, the hearer can think that the speaker is reporting to him/her that he/she has already greeted somebody. Second, the hearer can think that he/she is being greeted. In utterance (2) however, the speaker somehow observes the maxim of quantity, but breaks the approbation maxim because of much familiarity. It can be translated as follows: "My greetings, mister". Furthermore, looking at utterance (3) which is "My friend/mister, are you all right/ are you strong enough?" we can say that the speaker makes his greeting as informative as needed (quantity maxim) but breaks to some extent the approbation maxim. In the Havu community, the

above expressions are employed in a polite way by someone who wants to appear familiar with other people having the same age or sharing the same profession or social rank with them. To utter those expressions, the speaker does not need to make special gestures or signals of politeness. As for the answers that the hearer gives, in (1, 2) B: "**Néchi múzá wée**", and in (3) B: "**Néchi wáni**", all contain the Bald On-Record and lack informativeness just in case the hearer reacts to a greeting of someone from a group of more than two persons.

3.1.2 APOLOGIZING

Múzá wée, ákábá wàgàyìr'ókúlémá nákúderhà kúbi ngási hóshi nàgèrèrè, ómbér'óbónjò: "Mister, if you are angry for I have badly talked about you everywhere I pass, forgive me". As it can be obviously remarked in this utterance, though the speaker is talking to his/her peer, he/she recognizes that his/her addressee needs to be respected. In this respect, he/she uses the positive politeness strategy. As for the interpretation from the addressee, he can either think that the speaker does not recognize his fault because of the condition he places, but he simply wants to solve the problem by apologizing, or he can think that the speaker simply feels guilty and wants to be forgiven. In the former interpretation, in case it is the right one, the speaker is said to have broken the quality maxim because he says what he believes to be false by simply trying to avoid problems. In the latter case the speaker is said to have observed the maxim of agreement because he minimizes disagreement between himself and his addressee and maximizes agreement between himself and his addressee. In the Havu community's use of language, the present expression is not uttered in any circumstance. It requires its utterer to avail something edible or drinkable that he has to offer to his addressee in order to have reconciliation and enable the maxim of agreement to take place.

3.2 CUNNUBIAL EXPRESSIONS OF POLITENESS

These are expressions resulting from marriage and mostly used by husbands with their wives or the other way round.

3.2.1 GREETINGS

(1) **Nàlámúsizè nyábàná múkází wáni** "My greeting, mother of my children/my wife".

(2) **Nàlámúsizè shábàná múlúmé wáni** "My greeting, father of my children/my husband".

The above expressions are uttered by a husband or his wife when they meet after a long period separation. In them, the cooperative principle is upheld and the two utterances are made fully polite by the use of the cultural terms resulting from fruitful marriages, such as "Nyábàná" in (1) and "Shábàná" in (2) and their use is due to a high consideration on either part.

In utterance (1), A: Pos_x (sense-given)

B: S praises h (approbation)

C: S believes that x is not false (quality)

D: S believes that x is as informative to h as is required (quantity)

E: S believes that x is relevant (relation)

F: S is perspicuous through x (manner). This analysis shows that h is aware of being praised, understands the conveyed greeting, and finds x clear to interpret. This analysis is not different from the one we can come across after the interpretation of (2).

Rule:

—shábàná múlúmé wáni— /or—nyábàná múkází wáni—

3.3 EXPRESSING POLITENESS TO PEOPLE HAVING A MORE ADVANCED AGE

Hereafter is a sample of some polite utterances produced by people of a lower age towards other people of a more advanced age. It can be children- adult, adult- old person and so on depending upon the case.

3.3.1 GREETING

(1) Rhwàlámúsizè, dárhà/ nyámà “We have greeted, father/ mother”.

3.3.2 WARNING

(2) Nyám’òrhàgáyàgà, sí álikò nàgàsímírè nkúwírè k’ókágér’àhò wágw’ómúkíchókòlè. “Mother, do not mind me, but I would like to tell you that if you pass there, you will fall into a very deep hole”. The speaker of utterance (1) is a young boy/girl of around twelve to thirty years old who greets a man or a woman who is nearly as old as his/her father or mother. He/she can even extrapolate by uttering this polite expression towards a man or a woman who is as old as his/her grandfather. Here the emphasis is put on age equivalence rather than on family relationship. In fact, being a particle of politeness, the amount of information is not quantitative in that the addressee can understand the sense of that utterance, but can still wonder whether the speaker wants to greet him / her or he/she has just greeted somebody else and wants to report it to him/her. This lack of complete guessing of the polite expression is due to the fact that it is uninformative to both **S** and **h**. The words “Rhwà”, i.e. “we” for a single person and the deliberate use of “dárhà” and “nyámà”, i.e. father and “mother” for whoever has the age of father or mother makes this Havu piece of greeting a polite expression. The speaker recognizes his addressee’s age and thinks that his face needs to be protected from any kind of threat (positive politeness). As for utterance (2) the speaker can be a child, a youngster, an adult, even an old person who, by recognizing the addressee’s age, calls her “nyámà”, i.e. “mother”. Furthermore, the use of the negative politeness strategy makes the utterance rather polite and cooperative. The whole context can be represented as follows:

A: Neg_x (sense—given)

B: S believes x to be as informative as is required (quantity)

C: S believes x to be accurate (manner)

D: S believes x to be a clear expression (manner) and x is ↑h

E: S believes that x is true (quality). If **S** knows that **h** will be angry because of x, then quality is violated. In addition, the modesty maxim is upheld.

3.3.3 OFFERING FOOD

Dárhà, nàgàkúbázíz’ákábá wàgàsím’óbéhy’óbúnú búnóbùnò “Father, I would like to ask you if you may want to lie the mouth right now”. The speaker considers that by using the expression “òbéhy’óbúnù”, i.e. “lie the mouth” which actually means to eat sufficiently and quench one’s thirst, he/she will have diminished the boastfulness and self-praise involved in saying “welcome to this special food”, (modesty maxim). In the same utterance, by using the positive politeness strategy, the speaker becomes too polite at the point that he fails to observe the quantity maxim, because he mitigates the polite utterance and makes it more informative than is required. In addition, by the time that the speaker offers food to the hearer immediately implies an expense or cost to the speaker and benefit to the hearer (the beneficiary of the food offered), i.e. (modesty and tact sub-maxims are observed). Pragmatically, this can be represented as follows:

A: Pos_x (sense—given)

B: S makes x more informative for reasons of high degree of politeness (ostensible breach of the quantity maxim)

C: S believes that x is not false (quality)

D: S is searching for h’s benefit (tact) and x is ↑h

E: S is not boastful (modesty)

3.4 EXPRESSING POLITENESS TO CHILDREN

In this point, the convenient expressions to be addressed to children and people having a lower age in general are sampled.

3.4.1 GREETING

(1) **Chùbáká wée òkóméré?** That means “builder, are you strong/ well?”

(2) **Òkóméré sí múlègà?** i.e. “Are you well? **Múlègà** (a clan-related term)

In Kihavu, when mature people greet children or young people at any time, they use the children and /or young people grandfather’s names or terms related to their clan. In (1), the positive politeness being used, the speaker is a man, a woman, or an old person who considers that the young boy he/she talks to is evolving and becoming strong enough so that people in the community have high hopes on him. That is why he is called “**chùbákà**”, a polite way of naming an important builder or a person on whose actions the future can be founded. By praising the addressee in such a way, the speaker upholds the approbation maxim. It is also worth saying that both S and h are being cooperative, because h cannot respond with a harsh answer. In (2), the speaker overestimates the hearer’s clan (modesty) and seems to underestimate his. The term “**múlègà**” is an obligatory clanic word without which presence, especially in greetings, the expression becomes blunt. The following are the rules that govern expressions used to talk to children or youngsters:

Rules:

I: greeting + noun of quality

II: greeting + clanic term

3.4.2 ADVISING

Òrhàyirhàg’óbúsólè bwàwè búsh’ómúkúlémá wázimbà “Do not spoil your youth in stealing”. This is addressed to a young person who is in an excessive situation of theft. The speaker resorts to the negative politeness with the hinting strategy. In fact, he is sure that the hearer, having a younger age, needs to be respected, and to succeed changing the young man’s reprehensible behavior, he utters his illocution as a hint. Considering “**óbúsòlè**”, i.e. “the youth” as the most important period in a human being’s life, h observes the approbation maxim. Furthermore, the hinting strategy exploits the maxim of relation in that in the context envisaged in the utterance, a hint about the h’s ability to change his behavior will only conceivably be relevant as a means of the h’s eventual performance of the utterance. Moreover, the slight impositive side that the utterance bares is beneficial to the hearer, and can lead to a cooperative interaction between S and h. For instance, h can answer saying “**Néchi**”, i.e. “yes” to mean that he has tremendously been affected by the utterance even though it can sometimes be ↓h if the latter is delinquent.

3.5 EXPRESSING POLITENESS TO PEOPLE ON POWER

Hereafter is the cultural way a person speaking Kihavu can talk to someone on power or the “**Mwámì**”, the representative of the Havu culture and custom:

Greeting:

A: **Lébé, óndángúlè** “Mr. X, make me see”, i.e. “Convey my greeting to the Mwámì” which is impolite.

B: **Àyirwisé** “He has understood and greets you too”. In (A) the speaker wants to greet the representative of the Havu culture and custom, but to convey his greetings to the “mwámì”, he/she must kneel down and put his/her hands up and he/she cannot by himself/herself convey the greetings to the “mwami”, but he/she must ask other people around the “mwami” to greet the latter for him/her though the speaker may be looking at the “mwami” personally. When the people around the “mwami” hear the greeting, they reply saying “**Àyirwisé**”, i.e. “he has understood”. They cannot say “**Àyùnvírhé**” though it is its synonym because it is used for any Havu person who has heard something. Hereby, the speaker resorts to the Off-Record Indirect Strategy and upholds the approbation maxim. The speaker is more cooperative and careful to talk to that powerful and respectful figure in the Havu culture than he can be for other people.

4 CONCLUSION

This small-scale research has tried to analyze some expressions of politeness used in Kihavu. It has attempted to give some rules and formulas of politeness that govern conversational utterances in Kihavu, identify the types of politeness used, make an inventory of utterances in respect of the situations in which they are used, check the maxims of the cooperative and politeness principles which are broken and the upheld ones, and show the peculiar way politeness is performed in Kihavu.

The analysis revealed that the social extent to which an expression of politeness is used in Kihavu very much depends on the Bahavu's ability to perform the cultural values that are required. It has also shown that the Bahavu have their own ways of expressing politeness given that the polite utterances they produce are culture-specific. Havu people partially use gestural expressions, clanic, connubial, family-oriented, even honorific terms for reasons of love, familiarity, or high social respect. Furthermore, the present research showed that the bulk of maxims that Havu people break in their exchanges result on the one hand from the lack of adequate cultural training and the constituents of the Havu language itself on the other hand.

All in all, the discovery of some rules of Havu polite expressions and their analysis and the awareness of their accurate use can enable both scientists and non-scientists to make a judicious choice of polite expressions before addressing them to people.

REFERENCES

- [1] Adler, J. 1980. *A Pragmatic Logic for Commands*. Amsterdam: Tel Aviv University.
- [2] Ashor, By. 2001. *Oxford Advanced Learners' Dictionary of Current English*. Oxford: Oxford University press.
- [3] Brown, P. & S, Levinson. 1978. *Politeness: Some Universals in Language Usage*. Cambridge: Cambridge University Press.
- [4] Coleman & W, Douglas. 2001. *Levels of Informativeness of Data*. University of Toledo: Toledo, Ohio.
- [5] Gratwitz, M & R, Pinto. 1967. *Méthodes des Sciences Sociales*. Paris: Dalloz.
- [6] Leech, G. 1983. *The Principles of Pragmatics*. London: Longman.
- [7] Levinson, S. 1983. *Pragmatics*. Cambridge: Cambridge University Press.
- [8] Macmillan. 2002. *Macmillan English Dictionary*. London: Bloomsbury Publishing PLC.
- [9] Mulamba, N. 2009. *Research Methods in Linguistics*. ISP-Bukavu: Unpublished First Licence lecture notes.
- [10] Nyakasane, J. 2004. *A Pragmatic Study of Some Shi Proverbs*. ISP-Bukavu: Unpublished Thesis.
- [11] Reinhart, T. 1978. *Syntactic Domains for Semantic Rules*, in F. Guenther and S.J. Schmidt (Eds) *Formal Semantics and Pragmatics for Natural Language*. D.Reidel: Dordrecht.

FPGA Implementation of MQ Coder in JPEG 2000 Standard - A Review

S.D. Jayavathi and A. Shenbagavalli

Department of Electronics & Communication Engineering,
National Engineering College, Kovilpatti, Tamil Nadu, India

Copyright © 2016 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: JPEG2000 is a one of the popular image compression standard. The vital part of this standard JPEG2000 is Embedded Block Coding with Optimal Truncation (EBCOT). This block conserves major part of the processing time for performing compression operation. The EBCOT block consists of two components called bit-plane coder and MQ coder. The use of Field Programmable Gate Arrays (FPGAs) provides specific reprogrammable hardware technology that can be properly subjugated to obtain a reconfigurable system. The current MQ coder architecture seeks ways to provide high throughput and minimum execution time with the decreasing the size and power consumption. In this study, various techniques used to implement the MQ coder block in FPGA are compared.

KEYWORDS: MQ coder, EBCOT, JPEG 2000 Standard, FPGA.

1 INTRODUCTION

Image compression gained great attention as the demand for images, video sequences and computer animation has increased at very high rate. Many Image compression techniques have evolved to perform the compression process. Lossy compression has gained increasing popularity since the release of the JPEG standard. The same concept is used by the JPEG 2000 standard with minor modifications and is developed by JPEG team [1], [2] & [3]. The JPEG 2000 standard provides a rich set of features such as error resilience, manipulation of images in the compressed domain, region-of-interest coding, acceptable performance even at very low bit rates, rate control, etc., which are not available in existing standards, in addition to excellent compression performance. [4] & [5].

Fig. 1 shows elevated block diagram of the JPEG 2000 compression scheme. In the JPEG 2000, the input image in RGB color space is transformed to YUV space. The de-correlation of YUV space image is performed by application of Discrete Wavelet Transform (DWT) [1].

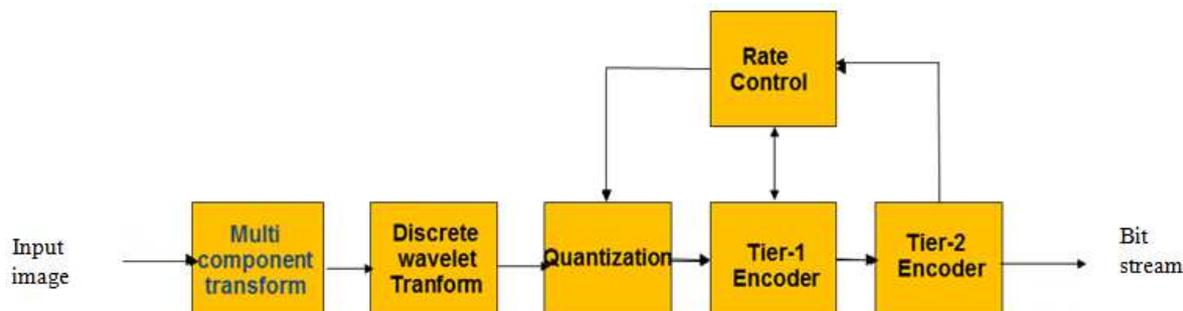


Fig. 1. Block diagram of JPEG 2000 Standard

The precision of input data is high leads to degradation in compression in lossless domain. Alternatively, in a lossy compression, the quantization reduces the precision of data effectively. The transformed coefficients from DWT are then quantized. The quantized sub-bands are then divided into a number of smaller code-blocks and the code-blocks are processed in EBCOT. The core part of JPEG2000 is its coding engine, Embedded Block Coding with Optimized Truncation (EBCOT). The EBCOT algorithm is bifurcated into two layers called Tier-1 and Tier-2. Tier-1 is responsible for source modeling and entropy coding, while Tier 2 produces the output stream [6]. EBCOT Tier-1 block consists of bit plane coding and binary arithmetic coding (MQ coder) block. Fig 2 shows the block diagram of the EBCOT Tier-1. The code-block is splitted into bit-planes and each bit plane is processed by Bit-plane coding. In the bit plane coding, the most significant bits (MSBs) of all the coefficients in the code block are processed, then the next most significant bits and so on. Each bit-plane is further decomposed into three passes, known as the significance propagation (SP) pass, the magnitude refinement (MR) pass, and the clean up (CU) pass. A bit may belong to only one of the three passes. The bit-plane is first encoded by a bit-plane coding (BPC) to generate intermediate data in the form of a context (Cx) and a binary decision (D) value for each bit position. Entropy coding is performed by MQ coder and is variant of binary arithmetic coding. To drive the probability models of the MQ coder, the bit-plane coder generates a *context*. The value of the bit, or symbol, (D) and its context (Cx) together form a context-data (Cx D) pair.

The estimated probability value from a lookup table is then chosen by the context information generated by EBCOT and MQ coder exploits this probability value to adjust the intervals and produce the compressed codes. The initialization of probability estimation (Q_e) modified according to the repetitive MSB binary values reduces the width thereby, the size of Look-Up Table (LUT) is reduced. The reduction of LUT leads to memory reduction and power consumption effectively. The majority of processing time is consumed by the operation of the EBCOT algorithm in JPEG2000.

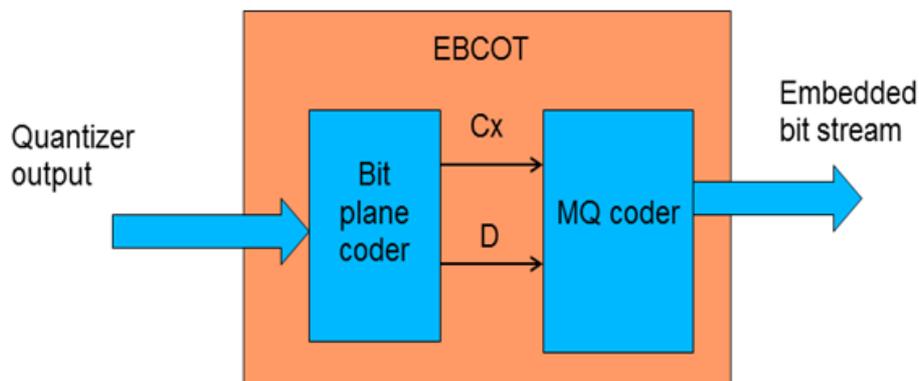


Fig. 2. Block diagram of EBCOT Tier-1

The Field Programmable Gate Arrays (FPGAs) offers specific reprogrammable hardware technology that can be properly used to obtain a reconfigurable system. This is used to enable the implementation of complex applications at a very low-power consumption. FPGAs have been referred due to the high efficiency provided by their architectural flexibility (on-chip memory, parallelism, etc.), reconfigurability and superb performance in the development of algorithms for highly demanding tasks.

The rest of the paper is organized as follows. Section II provides various works related to MQ coder implementation on FPGA devices and comparisons between the architectures are discussed in Section III. Finally section IV concludes the review of FPGA implementation of MQ coder in JPEG Standard.

2 RELATED WORK

Kishore Andra et al. [7] proposed system level hardware architecture for JPEG 2000 core algorithm. The important components are wavelet, bit plane and arithmetic coders and memory interfacing between coders and it is implemented in VHDL and the estimated area of hardware architecture is 3mm square and the frequency of operation is 200 MHz.

Since, throughput is the bottleneck in JPEG 2000 standard Arithmetic encoder, Yu-Wei Chang et al. [8] proposes Arithmetic Encoder (AE) capable of encoding multiple symbols per cycle is a competent approach to improve the throughput for high resolution image which can encode two symbols per cycle. This architecture exploits high level Parallelism to shorten

the critical path for two-symbol encoding. This proposed architecture can achieve 180 M symbols with 0.35 μm CMOS technology and the gate count is 7.7 K.

In [9], Liu Kai et al. have presented a new architecture with bit plane-parallel coder for Embedded Block Coding with Optimized Truncation (EBCOT) entropy encoder used in JPEG2000 to process all bit planes concurrently. In this architecture, the coding information of each bit plane can be obtained simultaneously and processed parallel. This architecture has advantages of no waste clock cycles for a single point and high parallelism compared with other architectures. The experimental results reveal that the processing time is reduced about 86% than that of bit plane sequential scheme. The prototype chip is designed using Field Programmable Gate Array (FPGA) and simulation results prove that it can able to process 512x512 gray-scaled images with more than 30 frames per second at 52MHz. The bit plane-parallel context modeling method can improve the block coding efficiency significantly. Moreover, only one low-cost arithmetic encoder is required to avoid using three arithmetic encoders. And high parallelism is the highlight of their architecture compared with existing architectures.

In [10], K. Varma, et al. proposed a new fast Split Arithmetic Encoder (SAE) block in EBCOT tier-1 design. The proposed block makes use of concurrency to attain enhanced throughput while maintaining coding efficiency. Two methods are used to evaluate the SAE process: clock cycle estimation, and FPGA hardware implementation. High throughput is achieved using both and the hardware implementation exhibits the highest speedup.

Michael Dyer et al. [11] have developed novel techniques which are capable of absorbing the high symbol rate from highly performed bit-plane coders, as well as providing five flexible design choices with novel architectures for realizing the MQ Coder for JPEG2000. Hypothesis testing method has demonstrated itself as the better solution than existing single and 2 CxD coders for a combined EBCOT system utilizing a single clock domain. This solution meets the throughput requirements of such a system without large increase in hardware cost. In terms of raw throughput, brute force coder with modified byte emission provides the highest CxD rate, with a reduced hardware cost compared to the original brute force technique.

Yijun Li et al. [12] have proposed a three-level parallel high-speed power-efficient architecture for EBCOT tier-1. This architecture is sub-divided into bit-plane coding (BC), arithmetic encoding (AE), and first-in first-out (FIFO) which connects BC with AE and the different throughput is balanced between them. To improve the system throughput, parallelism is adopted in three levels in BC: 1) the parallelism among bit planes; 2) the parallelism among coding bits and 3) the parallelism among three pass scans. Four pipeline stages are used in AE implementation. To achieve power efficiency, several techniques such as simple control logics are added to reduce computation in BC, memory access is reduced since AE is fed with fixed values instead of reading from FIFO, simple control logics are added to reduce computation in AE and forwarding technique is adopted to reduce switching activities in the very last two pipeline stages combined with clock gating. The proposed architecture can encode one code block with size in only around (0.35~0.46) clock cycles. Experimental results show that the proposed power reduction techniques keep the same system throughput and achieve power consumption of about 27% improvement compared with the architecture without these techniques.

In another implementation, two improved methods, referred as data-pairs ordering (DPO) and flexible MQ (FMQ) coder proposed by Yi-Zhen Zhang et al. [13]. It solves the configuration problem between the arithmetic coding module and the parallel context modeling module, takes full benefit of the bit plane parallel encoding technique to get better EBCOT encoder coding speed and efficiency significantly. The design of parallel EBCOT encoder is tested on the Altera Company Field Programmable Gate Array (FPGA) platform. The simulation results reveal that it can encode 54 million samples at 55-MHz working frequency on average. The proposed one can reduce execution time by 24% compared with the conventional parallel architecture design for bit plane coder.

Kie Liu et al. [14] have developed a novel architecture for an MQ arithmetic coder with high throughput. The architecture can process two symbols in parallel. The main characteristics are eight process elements for probability interval A prediction, the combination of computation units for the code register C with the Byte out & Flush procedure, and the utilization of a dedicated probability estimation table to reduce the internal memory. From synthesis results, the throughput of the architecture's can reach 96.60M context symbols per second with size of 1509 bits internal memory, compared to other architectures and suitable for chip implementation.

David Joseph Lucking.B.S. [15] has proposed a new FPGA MQ decoder design to be an improvement over previous software and FPGA implementations. The proposed design reduces the resources required by the MQ decoder by 35% and increases the clock speed by 5%. The number of clock cycles for a code block, on average, is also decreased by 7%. With the decrease in resources, clock cycles, and the increase in clock speed, the design presented in this paper achieves a higher throughput by 42%.

Nandini Ramesh Kumar et al. [16] proposed a field-programmable gate array (FPGA) based enhanced architecture of the arithmetic coder, which processes two-symbols per clock cycle as compared to the conventional architecture in which only one symbol per clock is processed. The output of the bit plane coder is the input to the arithmetic coder, in which more than two context decision pairs per clock cycle, is generated. Hence, two-symbol architecture is proposed which not only doubles the throughput, but also can be operated at frequencies more than 100 MHz to overcome this slow processing speed of the arithmetic coder, and speed up the process. A throughput of 210 Msymbols/sec and the critical path at 9.457 ns are achieved by this architecture. In [25], implementation of an efficient hardware for arithmetic coding is proposed which uses efficient parallel processing and pipelining for intermediate blocks. To provide a two-symbol coding engine, this idea is proposed which is efficient in terms of memory, performance and hardware. Verilog hardware definition language is used to implement this architecture and synthesized using Altera company field programmable gate array. The FIFO (first in first out) of 256 bits is the only memory unit used in this design to store the CXD pairs at the input, which is negligible compared to the existing architecture of arithmetic coding hardware designs. The simulation and synthesis results reveals that the operating frequency of the architecture proposed is more than 100 MHz and a throughput of 212 Msymbols/sec is achieved, which is double the throughput compared to conventional one-symbol implementation and enables at least 50% throughput increase compared to the existing two symbol architectures.

Minsoo Rhu, et al. have proposed a novel pipelined BAC architecture that can encode input symbols at a much higher rate than the conventional BAC architectures in [17]. The proposed architecture reduces the critical path delay and achieves a throughput of 400Msymbols/s. The critical path delay synthesized with 0.18 μ m CMOS technology is 2.42 ns, which is almost half of the delay taken in conventional BAC architectures.

Kishor Sarawadekar et al. [18] have investigated the rate of concurrent context generation to increase the throughput and they have devised a technique named as compact context coding. As a consequence, high throughput is attained and also it cuts down the hardware requirement. Renormalization and byte out stages operated concurrently to improve the performance of the matrix quantizer coder. The EBCOT encoder entire design is implemented on the field programmable gate array platform. The implementation results reveals that throughput of the proposed architecture is 163.59 MSamples/s. However, only bit plane coder (BPC) architecture operates at 315.06MHz which indicates that it is 2.86 times faster than the fastest available BPC design so far. In addition, it is able to encode digital cinema size (2048 \times 1080) at 42 f/s. In [19] they have studied the rate of byte emission in an image and the number of rotations performed. It shows that in an image, one and two shifts are occurred on an average 75.03% and 22.72% of time, respectively. Similarly, two bytes are emitted concurrently about 5.5% of time. Based on these facts, a new MQ coder architecture is proposed which is capable of consuming one symbol per clock cycle. The throughput of this coder is improved by concurrently operating the renormalization and byte out stages. Synchronous shifters are used instead of hard shifters to reduce the hardware cost. The proposed architecture is tested on Stratix FPGA and is able to operate at 145.9 MHz. A minimum of 66% of memory requirement of the proposed architecture is reduced compared to those of the other existing architectures.

Omkar C Kulkarni, et al. [20] proposed high speed and area efficient MQ decoder architecture which is implemented on Virtex-2 FPGA. The implementation results reveal that the architecture operates at 142 MHz and it has very low hardware cost. Estimated frame rate is 20.41 frames per second (FPS) at this frequency. The device design operates at 222.8 MHz on Virtex-5 and estimated frame rate is 32.02 FPS. Because shift register based renormalization unit is used which operates at high speed, to the great extent hardware overhead is reduced.

Mahesh Krishnappa [23] has devised parallel coding pass architecture in which a speedup factor of up to 4.6 is offered as compared to serial hardware architecture. It was found that BPC is computationally exhaustive as compared to BAC from the FPGA resource utilization. Synthesis results have shown that BPC and BAC hardware design can work at maximum clock frequency of 128.758 MHz and 112.927 MHz. Hence hardware implementation of BPC and BAC exhibits great prospects in reducing compression time as compared to software implementation of BPC and BAC.

M. Ahmadvand et al. [24] proposed a new simplified pipelined architecture for the JPEG2000 MQ-Coder. 20% decrease in hardware requirements and 10% increase in clock frequency resulted from the proposed approach. Post synthesis simulations indicate that the proposed architecture is able to compress 4 CIF video (704 \times 576 pixels) at a rate of 30 frames per second, making it a good approach for high resolution real time video coding, or high speed compression of high resolution images.

Jie Guo, et al. [26] presented an efficient VLSI architecture of JPEG2000 encoder. The proposed architecture functionally consists of three important parts: Discrete Wavelet Transform (DWT), block encoder (i.e., known as Embedded Block Coding with Optimized Truncation (EBCOT), which is has bit plane coder, MQ coder and rate-distortion (RD) truncation and memory management unit (MMU). For the block encoder, the bit plane parallel architecture and efficient MQ coder scheme are

adopted to improve parallelism and hardware utility. Experimental results show that a throughput of 120M samples per second is attained by the proposed efficient architecture.

David J. Lucking et al. [21] & [27] have presented JPEG- 2000 binary arithmetic decoder flexible FPGA implementation. The proposed JPEG2000 binary arithmetic decoder decreases the amount of resources used on the FPGA allowing 19% more entropy block decoders to fit on chip and consequently improving the throughput by 21% beyond previous designs.

Taufik Saidani et al. [28] presented and implemented a hardware architecture for the high-speed parallel bit-plane coding (BPC) in EBCOT module in JPEG 2000. Experimental results demonstrate how that their design outperforms well-known techniques with respect to the processing time. It can reach 70 % reduction when compared to bit plane sequential processing.

Layla Horrigue et al. have proposed a high speed and area efficient architecture of MQ decoder which is implemented on different FPGA platforms in [29]. A novel architecture for a MQ decoder with high throughput is presented by them in [30]. This architecture has been implemented in VHDL and synthesized using Xilinx’s and Altera’s design platforms respectively. The design operates at 439.5 MHz when implemented on Virtex-6 and the estimated frame rate is 63.24 frames per second (FPS) at this frequency. On Stratix III device, the design operates at 214.4 MHz and it has very low hardware cost. Hardware overhead is minimized to a great extent because the structure of the probability estimation table (PET) is replaced by a small PET ROM. The internal memory is reduced by the use of a dedicated probability estimation table.

3 DISCUSSIONS

Still, MQ coder plays vital role in EBCOT of the JPEG2000 standard which is an important bottleneck for real-time applications. Many researchers have proposed different hardware architecture for MQ coder in order to meet the real-time requirement and table 1 shows comparison of MQ coder implementation in JPEG 2000 with the author/year, title of the paper, architecture, its merit and results which shows the critical path delay, throughput, gate count, power consumption, processing time to improve the coding speed and maximum clock frequency that it operates with demerits. Most of the researcher uses parallel architectures to obtain improved throughput. Resource utilization of the architecture has reduced by reducing memory requirement using various methods. Still there is room to reduce the resource utilization by reducing the memory requirement of PET ROM table which is used to store the probability estimation values. Further power consumed by various blocks can also be reduced.

Table 1. Comparison of MQ coder Implementation in JPEG 2000 standard

S.No	Author/Year	Title of the paper	Architecture	Merits	Results/Demerits
1	Yu-Wei Chang, et al., (2004)	High Performance Two-Symbol Arithmetic Encoder in JPEG 2000	Arithmetic encoder 2 stage pipeline	High level parallelism to shorter the critical path for two-symbol encoding.	Critical path 11ns Throughput 2 symbol/cycle achieves 180 Msymbols/sec
2	Liu Kai, et al., (2006)	A High-Performance VLSI Architecture Of EBCOT Block Coding In JPEG2000	EBCOT bit plane-parallel scheme	High parallelism, and no waste clock cycles	Reduces the processing time about 86%
3	K. Varma, et al., (2006)	A Fast JPEG 2000 EBCOT Tier-1 Architecture that Preserves Coding Efficiency	Split Arithmetic Encoder (SAE) process. parallelism of the arithmetic encoding tasks.	Concurrency to obtain improved throughput	28% in total clock cycle savings is realized. Demerits: AE modules are slower than the CSA module; SAE architecture requires more hardware, multiple AE modules and extra FIFO buffers.
4	Michael Dyer, et al., (2006)	Concurrency techniques for arithmetic coding in JPEG2000	MQ coder hypothesis testing, brute force method.	Improve MQ coder throughput and the byte out processing mechanism.	High throughput Demerits: Lower clock rates due to the increased logic paths. Brute force coder suffers from a great reduction in operating frequency,
5	Yijun Li, et al., (2006)	A Three-Level Parallel High-Speed Low-Power Architecture for EBCOT of JPEG 2000	EBCOT tier-1, bit-plane coding (BC), arithmetic encoding AE), parallelism in BC. simple control logics are added	Reduce computation in BC; power consumption and area.	27% improvement in the power consumption, 6.6K gate counts for data path and control unit and 49 29 bits memory

6	Yi-Zhen Zhang et al., (2007)	Performance analysis & architecture design for JPEG2000	EBCOT data-pairs ordering (DPO) and flexible MQ (FMQ) coder.	Improves the coding speed and efficiency.	Reduced execution time by 24%. Demerits: Delay may occur in stage 1 of FMQ. Some delays can be smoothed by DPO, but others cannot be.
7	Kai Liu a,n et al.,(2010)	A high performance MQ encoder architecture in JPEG2000	MQ Encoder pipelining	Process two symbols in parallel. High throughput. Simple structure of the probability estimation table(PETROM).	Clock 220.10 MHz Throughput 440.20MHz reach 96.60MSPS at its maximum speed
8	Nandini Ramesh Kumar, et al., (2010)	An FPGA based fast two symbol processing architecture for JPEG 2000 arithmetic coding	MQ Coder Two symbol architecture Pipeline 4stage in VHDL	Generates more than two context decision pairs per clock cycle. doubles the throughput, more efficient and cost effective	Critical path 9.457ns Throughput 210 msymbol/sec Max frequency 106.2MHz
9	Minsoo Rhu et al., (2010)	Optimization of arithmetic coding for JPEG2000	Arithmetic encoder Trace Pipelining Renormalizing look ahead scheme	Encode input symbols at a much higher rate. Reduce the critical path delay. Increase the throughput. Reduce the number of cascaded shift operations.	Critical path 2.42ns Clk Frequency 413MHz FOM 46.93 Demerit: Gate count is increased only by 5%. due to parallel processing
10	Kishor Sarawadekar , et al., (2011)	An Efficient Pass-Parallel Architecture for Embedded Block Coder in JPEG 2000	EBCOT compact context coding	High throughput is attained and hardware requirement is also cut down.	Throughput is 163.59 MSamples/s Demerits: Design requires more memory bits.
11	Kishor Sarawadekar et al., (2012)	VLSI design of memory-efficient, high-speed base line MQ coder for JPEG 2000	MQ coder operating the renormalization and byteout stages concurrently. synchronous shifters are used instead of hard shifters.	Throughput is improved. Hardware cost is reduced. Memory requirement is reduced	Operating at 145.9MHz. Memory increased to 66%
12	Omkar C Kulkarni, et al., (2011)	VLSI Implementation of MQ Decoder in JPEG2000	MQ Decoder	High operating frequency.	Maximum operating speed is 222.8 MHz and estimated frame rate is 32.02 FPS. Demerit: Requires one extra cycle to decode each symbol.
13	Jiri Matela, et al., (2011)	Low GPU occupancy Approach to Fast Arithmetic coding in JPEG 2000	MQ coder improved enhanced renormalization	-	-
14	M. Ahmadvand, et al., (2012)	A New Pipelined Architecture for JPEG2000 MQ-Coder	MQ Coder Five pipeline stage	the number of clock cycles for an encoding process is higher critical path has been reduced	Clock 208.1 MHz Gate count 20% lower than the next fastest design.
15	Nandini Ramesh Kumar et al., (2012)	Two-Symbol FPGA Architecture for Fast Arithmetic Encoding in JPEG 2000	Arithmetic encoder Pipelining and parallel processing	Providing a higher throughput and an operating frequency of 100 MHz. The coding efficiency is not affected and the memory is kept minimum.	Memory unit is negligible Operating frequency 100MHz Throughput 212 Msymbols/sec
16	Jie Guo, et al., (2013)	Efficient VLSI Architecture of JPEG2000 Encoder	JPEG 2000 Encoder RD truncation	Used to gain higher computational accuracy under lower hardware overhead constraints. Reduce processing time.	Throughput of 120M Samples per second.
17	David J. Lucking, et al., (2013)	FPGA implementation of the JPEG2000 binary arithmetic (MQ) decoder	MQ Decoder Eliminated barrel shifter and instead performing the	Higher clock speed. Minimizes the amount of logic	Reduces the resources required by 37% and increases the clock speed by 12% increasing the throughput by 21%

			renormalization in a recursive nature.		
18	Taoufik Saidani, et al., (2013)	An efficient hardware implementation of parallel EBCOT algorithm for JPEG 2000	EBCOT bit plane-parallel scheme	Reduced clock cycles, faster, LEs has reduced due to the reduced data width of the (CX,D) pairs.	70 % reduction in processing time. Maximum operating speed of this design is 186 MHz
19	Layla Horrigue et al., (2014)	A High Performance MQ Decoder Architecture in JPEG2000	MQ Decoder	high speed architecture	Maximum operating speed is 439.58 MHz and estimated frame rate is 63.23 FPS.
20	Layla Horrigue, et al., (2014)	An efficient hardware implementation of MQ decoder of the JPEG2000	MQ Decoder based on reduced probability estimation block and faster MQ decoding.	Use of a dedicated probability estimation table decreases the internal memory. Uses a small area to get a high speed.	The Maximum operating speed is 439 MHz. Memory requirement is reduced by 37.1%

4 CONCLUSION

This paper reviews the different hardware architecture used in FPGA Implementation of MQ coder of EBCOT in JPEG 2000 standard and the performance of architectures are analyzed in terms of resource utilization, maximum clock frequency, execution time and throughput. It is found that most of the architecture uses either pipelining or parallel processing or both to process two symbols at a time. Minimum area is the one of design goal of the VLSI technology. Hence it is also identified to reduce the area by minimizing the memory requirement of the probability estimation table without affecting the performance of the MQ coder. In future, the research, by reducing the chip area and power consumption, efficient architectures for MQ coder can be designed by minimizing the memory requirement.

REFERENCES

- [1] Tinku Acharya & Ping-Sing Tsai, JPEG2000 Standard for Image Compression: Concepts, Algorithms and VLSI Architectures, John Wiley & Sons, Inc., Publication, 2005.
- [2] ISO/IEC JTC 1/SC 29/WG 1, (ITU-T SG8) Coding of Still Pictures, JBIG (Joint Bilevel Image Experts Group), JBIG Committee, 16 Juillet 1999.
- [3] ISO/IEC JTC1/SC29/WG1 (ITU-T SG 16) The JPEG-2000 Still Image Compression Standard, document JPEG 2000 Part 1 020719 (final publication draft) (2002)
- [4] Taubman, D.S., Marcellin, M.W, "JPEG2000 image compression fundamentals, standards, and practice" (2002)
- [5] Rabbani, M., Joshi, R. "An overview of the JPEG 2000 still image compression standard". *Signal Process Image Commun* 17(1), 3–48 (2002)
- [6] Gaetano Impoco , JPEG2000 - A Short Tutorial
- [7] Kishore Andra, Chaitali Chakraborti, and Tinku Acharya, "High performance JPEG 2000 Architecture", *IEEE conf.* 2002.
- [8] Yu-Wei Chang, Hung-Chi Fang, and Liang-Gee Chen, "High Performance Two-Symbol Arithmetic Encoder in JPEG 2000", *IEEE conference proceedings*,2004.
- [9] Liu Kai, Wu Chengke, Li Yunsong, "A High-Performance VLSI Architecture Of EBCOT Block Coding In JPEG2000", *Journal Of Electronics (China)* ,Vol.23 No.1 January 2006
- [10] K. Varma, A. E. Bell, H. B. Damecharla, J. E. Carletta, "A Fast JPEG2000 EBCOT Tier-1 Architecture That Preserves Coding Efficiency", *IEEE conference proceedings*, 2006.
- [11] M. Dyer, D. Taubman, S. Nooshabadi, and A. Kumar Gupta, "Concurrency techniques for arithmetic coding in JPEG2000", *IEEE Trans. Circuits Syst. I*, Reg. Papers, vol. 53, no. 6, pp. 1203–1213, Jun. 2006.
- [12] Yijun Li, and Magdy Bayoumi, "A Three-Level Parallel High-Speed Low-Power Architecture for EBCOT of JPEG 2000", *IEEE Transactions On Circuits And Systems For Video Technology*, Vol. 16, NO. 9, pp.no.1153-1163, September 2006.
- [13] Yi-Zhen Zhang, Chao Xu, Wen-Tao Wang, and Liang-Bin Chen, "Performance Analysis and Architecture Design for Parallel EBCOT Encoder of JPEG2000", *IEEE Transactions On Circuits And Systems For Video Technology*, Vol. 17, No. 10, pp.no. 1336-1347, October 2007.
- [14] K. Liu, Y. Zhou, Y. Song Li, J.F. Ma, "A high performance MQ encoder architecture in JPEG2000", *INTEGRATION, the VLSI journal* 43 (3) (2010) 305–317.
- [15] David J. Lucking, Eric J. Blaster, Kerry L. Hill, Frank A. Scarpino, "FPGA implementation of the JPEG2000 MQ decoder", Master's thesis, University of Dayton, May 2010.

- [16] N.Nandini Ramesh Kumar, Wei Xiang, Yafeng Wang, An FPGA-Based Fast Two-Symbol Processing Architecture For JPEG 2000 Arithmetic Coding", *IEEE conf.* 2010.
- [17] M. Rhu and I.-C. Park, "Optimization of arithmetic coding for JPEG2000," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 20, pp. 446-451, 2010.
- [18] K. Sarawadekar and S. Banerjee, "An Efficient Pass-Parallel Architecture for Embedded Block Coder in JPEG 2000," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 21, pp. 825-836, 2011.
- [19] K. Sarawadekar and S. Banerjee, "VLSI design of memory-efficient, high-speed baseline MQ coder for JPEG 2000", *VLSI journal INTEGRATION*, vol. 45, pp. 1-8, 2012.
- [20] Omkar C. Kulkarni, Kishor Sarawadekar, Swapna Banerjee, "VLSI Implementation of MQ Decoder in JPEG2000", in *Proceeding of the 2011 IEEE Students' Technology Symposium*, pp. 193-197, January 2011.
- [21] David J. Lucking, Eric J. Blaster, Kerry L. Hill, Frank A. Scarpino, "FPGA implementation of the JPEG2000 binary arithmetic MQ decoder", *J. Real Time Image Process. Syst.* (July) (2011). Springer.
- [22] Jiri Matela, Martin Srom, and Petr Holub, "Low GPU Occupancy Approach to Fast Arithmetic Coding in JPEG2000", Conference paper, January 2011. at: <http://www.researchgate.net/publication/221274103>
- [23] Mahesh Krishnappa, "Parallel architectural design space exploration for real-time image Compression", Masters thesis, University of Stuttgart, May 2011.
- [24] M. Ahmadvand and A. Ezhdehakosh, "A new pipelined architecture for JPEG2000 MQ-coder," in *Proceedings of the World Congress on Engineering and Computer Science*, 2012, pp. 24-26.
- [25] Nandini Ramesh Kumar, Wei Xiang, Yafeng Wang, "Two-symbol FPGA architecture for fast arithmetic encoding in JPEG 2000", *J. Signal Process. Syst.* 69 (2012) 213-224. Springer.
- [26] Jie Guo, Yunsong Li, Kai Liu, Jie Lei, Chengke Wu, "Efficient VLSI Architecture of JPEG2000 Encoder", 6th *International Congress on Image and Signal Processing (CISP 2013)*
- [27] D. J. Lucking, E. J. Balster, K. L. Hill, and F. A. Scarpino, "FPGA implementation of the JPEG2000 binary arithmetic (MQ) decoder," *Journal of real-time image processing*, vol. 8, pp. 411-419, 2013.
- [28] T. Saidani, M. Atri, L. Khrijji, and R. Tourki, "An efficient hardware implementation of parallel EBCOT algorithm for JPEG 2000", *Journal of Real-Time Image Processing*, pp. 1-12, 2013.
- [29] L. Horrigue, T. Saidani, R. Ghodhbane, and M. Atri, "A high performance MQ decoder architecture in JPEG2000," in *World Congress on Computer Applications and Information Systems (WCCAIS)*, 2014, pp. 1-5.
- [30] L. Horrigue, T. Saidani, R. Ghodhbani, J. Dubois, J. Miteran, and M. Atri, "An efficient hardware implementation of MQ decoder of the JPEG2000", *Microprocessors and Microsystems*, vol. 38, pp. 659-668, 2014.

BACTERIAL BIODIVERSITY OF THE DRINKING WATER DISTRIBUTION NETWORKS OF REGIDESO KISANGANI (RD CONGO)

E. MOLAMBOLE¹, K.E. MOKILI¹, M. KAZADI²⁻³, and W. OLEKO²⁻³

¹Institute of higher learning of the Medical Techniques of BASOKO (ISTM-Basoko), RD Congo

²University of Kisangani, Faculty of Science, Department of biotechnological Sciences, RD Congo

³University of Kisangani, Station control room of Biodiversity (CSB), RD Congo

Copyright © 2016 ISSR Journals. This is an open access article distributed under the *Creative Commons Attribution License*, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: In Kisangani, 100 taps two major networks (low and high pressure) water distribution REGIDESO were selected for bacteriological analysis.

From a quantitative point of view, the results of our study showed a high bacterial' biodiversity in the REGIDESO distribution network: the number of bacteria varies from 6,10 to 290,10e bacteria / ml in the circulating biomass and from 4 10⁶ to 90,10⁶ bacteria / cm² biomass biomass fixed generally, bacterial densities are highest in the biofilm than in the aqueous phase.

The most identified genera Escherichia, Klebsiella, Salmonella, Citrobacter Pseudomonas, Flavobacterium, Acinetobacter, Moraxella, Micrococcus, Alcaligenes, Corynebacterium Bacillus, Enterobacter.

Maintaining the quality of drinking water should be characterized by stability of bacterial growth. The treatment plant and water distribution in the DRC must control the sources of the reduction of microbial contamination and limit microbial degradation of drinking water.

KEYWORDS: biofilm, drinking water, distribution network, bacterial diversity.

1 INTRODUCTION

The access to drinking water is one on the human basic rights being recognized by the general meeting of the Plain Nation of then on July 28th, 2010. The Democratic republic of Congo (DRC) has the important fresh water resources for her sustainable development, unfortunately the Congolese's do not have, all, access to drinking water in sufficient quantity. About thirty years ago, remarked Fanny Gauthier (2001) that the drinking water delivery systems were regarded as inert units.

The main objective of these networks was the routing of water towards the consumers, in order to answer in quantity sufficient and any point of the network their request. The management of these networks consisted a long time of the management of simple tools for transport of water and the quantitative aspects were privileged compared to the qualitative aspects, thus involving over sizings of networks.

Today, this concept of quantity appears incompatible with the qualitative aim, fixed by the regulation, so that a water is in conformity with quality necessary for a water intended for human consumption.

In spite of the immense water resources soft of the Democratic republic of Congo (DRC), the country must take up a major challenge in the sector of water: to increase the low level of access to drinking water of its population quickly growing. Two decades of under investment, worsened by the destruction of the installations during the conflict, largely deteriorated the infrastructures and water the services of the country (Kazadi, 2012).

The rate of access to water has consequently known a dramatic decline compared to the level of years 1990 former to the conflict. The current rate in DRC is approximately 26%, one of weakest of sub-Saharan Africa (PARTOW, 2011),

REGIDESO is a public enterprise related to commercial technical, industrial and equipped with the legal personality. Created in 1939, it is currently governed by the general provisions of the law tallies applicable to the public enterprises and by its own statutes. Its mission is to study, install and manage the production and the water supply through the country. But, the challenge for this control consists in managing to mobilize the immense water resources in which the DRC abounds, to ensure their potability and to distribute them to the population.

However, the REGIDESO failed in its spot to produce a drinking water of quality following the lack of qualified operators, chemical products and spare parts available and reliable, associated with financial constraints, blocks any functionality and maintenance of the system. With that the lack of water is added led to frequent interruptions of the water conveyance and the escapes of the distribution network still pejorent the situation.

The objective of our research is to count, to specify the bacterial biodiversity in the distribution network of the REGIDESO and to determine the water quality used like drink water in the town of Kisangani in RD Congo.

2 METHODOLOGY

The study proceeded in the town of Kisangani in Eastern province. The bacteriological analyses of water were carried out at the laboratory of bacteriology of the Faculty of Science of the University of Kisangani.

The bacteria in the biofilm and the circulating water of the distribution networks were counted isolated after nutritive dilution starting from agar and the various kinds starting from the selective mediums.

By the technique of filtration on membrane, two culture media were used for the research of the indicator germs of fecal pollution; mediums MAC Conkey for the coliforms and Bile Esculine Azide for the fecal streptococci (entérocoques). The numeration of the colonies was made by the examination with the binocular magnifying glass desboites of Petri incubated while the identification was made using the classical gallery made up of five Kligler mediums, Citrate of Simons, Manitol, the ui'ea, SIM (SH2, Indo, mobility).

3 RESULTS

The result of our study showed a strong bacterial biodiversity in the distribution network of REGIDESO, The number of bacterium varies from 6,103 to 290,103 with an average of 50.188bactéries/ml in the circulating biomass and 4,106 to 90,106 with an average 57.341.176bactérie/cm² in the fixed biomass. Generally, the bacterial densities are higher on the level of the biofilm than in the aqueous phase.

We think like Block and al., 1993; Were useful and al., 1995; Sibiile and al., 1997 that the bacterial densities are variable in a water distribution network according to the type of biomass considered.

Block, 1992 classifies these organizations in 4 groups such as des indigenous species, of the species not expected of the consumer, the harmful species and the species medical point of view.

The results of T-test show that the difference between the averages in number of the germs in the various sites are nonsignificant bus p-been worth is <to 95%.

During our study, several counted bacteria kinds were identified, as well on the level of the circulating phase, as on the level of the biofilm such as Acinetobacter, Alcaligenes, B acillus, Citrobacter, Corynebacterium, Enterobacter, Escherichia, Flavobacterium, Kiebsiella, Micrococcus, Moraxeila, Pseudomonas, Salmonella. All time the genre Pseudomonasdomine in all the sites and the two water phases (circulating and fixed).

The enumeration of the indicator germs of fecal pollution revealed that on the whole cf analyzed water of tap, the average of the colonies exceeds 65 by 100 ml. Any S the water provided by Régideso to the population of the town of Kisangani is except standards of WHO, is unsuitable with human consumption and constitutes sources of several diseases of hydrous origins whose the area knows. The identified germs are: Citrobacter (52%), E. Coli (22%), Klebsiella (12%), Salmonella spp (8%), Enterobacter (6%) then Enterococcus (i00%)

The water of tap which is very often disparaged by the populations does not respect the recommendations of WHO as regards potability because of degradation of distribution network (pipelines) its quality leaves something to be desired.

4 CONCLUSION

At the end of this work and in consideration of the above mentioned criteria, one can say that in the town of Kisangani, the drinking water distribution networks of the REGIDESO cannot today any more be regarded as simple tools for transport of water to the consumers. They constitute a genuine biological engine, inside whose is set up a bacterial dynamics, and where a growth of the micro-organisms is observable.

Indeed, the use of disinfecting does not make it possible to in no case the total inhibition of the bacterial proliferation. We think that to limit bacterial reviviscence in water distribution network of the REGIDESO Kisangani, an action must be carried out on the cause of the presence of these micro-organisms and their multiplication. It is important that the persons in charge think of an optimization of the sectors of treatment.

A proposal would be the increase in the amounts of disinfecting out of free chlorine but curiously, this increase would involve that of the formation of by-products with possible going beyond the standards of potability of water, and with the appearance of flavours ("chlorine taste" of water) leading to complaints of the consumers. It is then necessary to change pipings of networks placed since the years 1959,

REFERENCES

- [1] BLOCK J.C., 1992, Biofilms in drinking water distribution systems. In *Biofilms -- Science and Technology*, p.469-485, L.F. Melo et al. (eds), Kluwer Academic Publishers, the Netherlands.
- [2] BLOCK J.C., HAUDIDIER K., PAQUIER J.L., MIAZGA J., et LEVI Y., 1993, Biofilm accumulation in drinking water distribution systems, *Biofouling*, 6, p. 333-343.
- [3] GAUTHIER F., 2001, Biofilms et qualité biologique de l'eau potable au cours de distribution, Mémoire de DESS, Université Picardie, 78p
- [4] KAZADI M., 2012, Contribution à l'étude de la qualité et la gestion de l'eau de boisson dans la région de Kisangani, thèse doctorale, Fac. Des Sciences, LTNKIS, 245 p,
- [5] PARTOW H., 2011 Problématique de l'Eau en République Démocratique du Congo. Défis et Opportunités Rapport Technique, Programme des Nations Unies pour l'environnement, 98p
- [6] SERVAIS P., LAURENT P., RANDON G., 1995, Comparison of the bactericide dynamics in various French distribution systems, *Journal Water SRT-Aqua*, 44, (1), pp.10-17.
- [7] SIBILLE I., MATHIEU L., PAAUIN J.L., GATEL D. et BLOCK J.C., 1997, Microbial characteristics of a distribution system fed with ncinoluted drinking water, *Water Research*, 31, 9, p. 23 18-2326.

