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PROFESSIONAL INTEGRATION OF YOUNG GRADUATES - QUALITATIVE APPROACH-

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ABSTRACT

This paper aims at describing the results of a qualitative study on higher education and the professional integration of young graduates from the Faculty of Law, Economics and Social Science of Tangier - Morocco. We have conducted semi-structured interviews with 44 graduates to discuss their views regarding the effect of initial training on employability. The interviews are analyzed using the qualitative data-analysis software program NVivo. The majority of the respondents do not perceive a strong tie between the initial training and the professional integration. Thus, the respondents specify the factors, which limit the positive effect of training on preparing graduates for the professional life and suggest some solutions for the unemployment problem prevailing among young graduates.

Key Words: Graduate unemployment - Higher Education - Human Capital - Initial Training - - Professional Integration - Qualitative Analysis.

JEL Classification: A2; 20; 22; 23

1. INTRODUCTION

According to the traditional theory of the human capital, education is an economic investment that increases worker productivity skills and constitutes, in fact, a form of human capital[1] **(G.S. BECKER, 1964)**. Thus, it establishes a positive and growing relationship between the educational level and the probability to find a job with a higher salary[2]. This conclusion is confirmed by numerous empirical studies; **NAUZE** and **TOMASIN (2002)** find out that the academic certificates reduce the risk of unemployment, promote the access to well-paid jobs[3]. **BEAUD** and **PIALOUX (2003)** cited by **CAMARA I (2011)** believe that young people with a low educational level face great difficulties in finding jobs[4]. However, several empirical studies reveal the paradox that characterizes the economies in the Maghreb countries where the diploma is not a mean to get a job and does not offer access into the key jobs of the economy; **BEN SEDRINE** and **PLASSARD[5], (1998), HAFAIEDH[6], (2000), KHELFAOUI[7], (2001).**

1 Human capital is a broad concept, also taking into account health and food, but researchers tend to limit it to education and training.

2 BECKER Gary S., (1962). Investment in Human Capital: A Theoretical Analysis., Journal of political Economy, Vol. 70, Supplement: OCTOBRE 1962, pp. 9-49.

3 NAUZE-F E & TOMASINI M, (2002). Diplôme et insertion sur le marché du travail : approches socioprofessionnelle et salariale du déclassement, ECONOMIE ET STATISTIQUE N 354, pp. 21-43.

4 CAMARA I (2011), Human capital and the process of integrating young people into the labor market : The case of the township of Aboisso, World statistical Congress, 2011, Dublin (Session CPSO55)

5 Ben SEDRINE, S. et PLASSARD, J.M. (1998). Enseignement supérieur et insertion professionnelle en Tunisie, Presse de l'université de sciences sociales de Toulouse, Toulouse.

6 HAFAIEDH, A. (2000). Trajectoires de chômeurs diplômés en Tunisie in Vincent GEISSER (ED.) Diplômés d'ici et d'ailleurs, CNRS, Paris.

7 KHELFAOUI, Z., (2001). Capital social et capital humain : un axe structurant des relations euro-méditerranéennes. Communication aux Xe journées d'Hiver de l'Université CADDI AYAD, Marrakech.

In Morocco, some graduates find themselves excluded from the job market, while others succeed in getting a job only after a long period of unemployment **(BOUGROUM, IBOURK** and **TRACHEN, 2002)**[8]**.** The same finding is affirmed by **BOUGROUM** and **WERQUIN (1995)**[9] in their study on the youth mobility and unemployment in the Marrakech region. Besides, holding a university degree does not guarantee a supporting training in the job market (**MOURJI** and **GOURCH**, **2008)**[10]**.** Faced with this contradictory situation, it is necessary to conduct studies to remove the worries with regard to the employment situation of young people, especially after the failure of several specific programs launched to facilitate the entry into the professional life for young graduates, (**BOUGROUM** and **IBOURK**, **2002)**[11]

As it has been mentioned before, this article aims at describing the results of a qualitative study on the initial training and professional integration of the graduates from the Faculty of Law, Economics and Social Sciences of Tangier – Morocco. It explores their perceptions regarding the role of training in preparing graduates for the professional life and their suggestions regarding the measures which can facilitate their integration.

Unlike most other studies, which measure the effect of education on employability using surveys, this study tries to go beyond the quantitative approach and seeks to discuss the perspectives of graduates with regard to the relationship between the training and integration[12]. More precisely the graduates are required to give their viewpoints on the following:

- The effect of initial training on professional integration;
- The factors behind the unemployment of young graduates;
- Suggestions for solving the problem of unemployment among young graduates.

To go further with our enquiry, semi-structured interviews are conducted with 44 graduates, who obtained their "B.A degree" in 2012 from the Faculty of Law, Economics and Social Science of Tangier (Jurists and Economists). We develop an interview guide to collect the necessary information. For this reason, the interviews are analyzed using the qualitative data analysis software NVivo.

2. METHODOLOGY

2.1. Field of study

The Faculty of Law, Economic and Social Sciences of Tangier was established, in 1997, as part of Abdelmalk Essaadi University[13]. It aims at developing teaching and research programs in the legal, economic and social fields. It adopted the LMD pedagogic program (License-Master-PhD) in 2003 to improve the quality of higher education and offer students an adequate academic environment, effective teaching and a well-diversified training. In fact, several graduates and intellectuals with highly specialized trainings in law and economics have graduated from this faculty and we believe that they deserve to occupy the key positions in the job market. Moreover, as far as we know, there are few studies that have been conducted on the students, who have graduated from this Faculty. Thus, it is quite interesting to draw the readers' attention to this institution, which deserves to be improved.

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8 BOUGROUM, M. et IBOURK, A. et TRACHEN, A., (2002). L'insertion des diplômés au Maroc : Trajectoires professionnelles et déterminants individuels. Revue région et développement N°15-2002

9 BOUGROUM, M. et WERQUIN, P., (1995). Mobilité et chômage des jeunes diplômés dans la région de Marrakech. Revue région & développement N° 1-1995.

10 MOURJI F. et GOUECH A. (2008). Modélisation de l'insertion professionnelle des diplômés de l'enseignement supérieur au MAROC. Critique économique N°22. Printemps – été 2008. P. 13-45.

11 BOUGROUM M. et IBOURK A. (2002). Le chômage des diplômés au Maroc: quelques réflexions sur les dispositifs d'aide à l'insertion. Formation Emploi 79, p. 19-107.

12 It is important to note that research presented in this paper is part of a study on "the effect of training on the probability of being employed and on wages" which involved two approaches "quantitative and qualitative".

13 The university ABDELMALEK ESSAADI is a public Moroccan university created in 1989, consists of 11 institutions spread across the northern region.

2.2. Data Source and Sampling Method.

Data are collected from a primary source used as part of our thesis. In fact, after obtaining the authorization of the General Secretariat of the faculty, we have contacted the administration, which provided us with the lists of graduate students in 2012. We used APOGEE[14] software to reach out phone numbers of the graduates along with their email addresses so as to contact them for more information.

Using the criterion-based sampling method, our sample is composed of 44 graduates from the Faculty of Law, Economics and Social Sciences of Tangier, who obtained their B.A degree in 2012 in the following majors: "Economics and management", "Private law: Arabic section", "Private law: French section", "Public law: Arabic section" and "Private law: French section"

Thus, we have tried to base the selection of our interviewees on the widest possible diversity in order to have representatives from different fields and different professional situations, bearing in mind that the eligibility criteria taken into consideration are: having a B.A degree obtained from the Faculty of Law, Economics and Social Sciences of Tangier in 2012, being 20 to 30 years old, not having conducted parallel studies, and completing his studies (the students pursuing their higher studies are, therefore, excluded from our survey.)

2.3. Data Collection and Analysis

Individual semi-structured interviews are conducted with 44 graduates to allow the respondents to speak freely about their experience and opinions about the professional integration. The volunteers have received an email message inviting them to take part in this study. The former students who have agreed to be interviewed become participants in the survey. The ethical approval has been obtained from the university before starting data collection.

So as to proceed with our study, we have developed an interview guide to question the interviewees on each topic to get their opinions and make sure not to influence their answers. We have also collected some information on the socioeconomic characteristics of the participants (their gender, age, marital status ...)[15] and allocated a specific code for each respondent to guarantee their anonymity.

The participants were interviewed in June and July 2015 (three years after their graduation). We have adapted the form of semi-directive interviews with the constraints of the interviewees knowing that each interview has lasted nearly for an hour.

We have relied on the thematic content analysis of the respondents' speeches using the NVivo qualitative data analysis software. First, we have carried out the categorization and encoding operation; each party is classified in a particular category. Second, these categories are grouped according to more general themes and are subject to a descriptive summary. Finally, we have conducted a more interpretive analysis enhanced with a theoretical comparison. As for the quantitative data, they are subject to a descriptive analysis using the SPHINX software.

3. RESULTS

We will synthetically report the interviewees' speeches from their responses to our questions during the semi-structured interviews. But we will first introduce the profile of our 44 participants in order to better understand their attitudes and reactions.

[14] « APPLICATION POUR L'ORGANISATION ET LA GESTION DES ENSEIGNEMENTS ET DES ÉTUDIANTS », It is an integrated management software designed to manage enrollments and student records at universities.

15 This information has been collected during the achievement of the survey.

3.1. DESCRIPTION OF PARTICIPANTS

The selected sample includes 52% of male participants and 48% of female participants. As for the marital status, 70.5% are reported being single at the time of the interview while 30.5% are married. Thus, the 44 interviewees, all Moroccans, are between 23 and 29 years old, graduated from the faculty of Law, economics and social sciences of Tangier in 2012. The percentage of their different university branches is divided as follows: 43% of graduates in Private Law (53% for French section and 47% for the Arabic section), 25% of graduates in Public Law (46% for the French section and 54% for the Arab section) and 32% of graduates in economics & management.

Table 1: Field of study & language of study

	Arabic		French		***Total***	
	N	***%***	***N***	***%***	***N***	***%***
Economics & management.	***0***	***0,0%***	***14***	***100,0%***	***14***	***31,8%***
Private Law	***9***	***47,4%***	***10***	***52,6%***	***19***	***43,2%***
Public Law	***6***	***34,1%***	***5***	***65,9%***	***11***	***25,0%***
Total	***15***	***34,1%***	***29***	***65,9%***	***44***	***100,0%***

Concerning the reasons for the choice of the field of study, the results show that the professional planning cannot be a decisive element since only 7% of the respondents have reported that they chose their field of study on the basis of job opportunities, while 48% for a personal interest, 18% for encouragement by other people, 11% for the confined possibility of choices they have had, and the rest declare that the baccalaureate diploma is the reason behind their choice bearing in mind that 57% of the respondents hold a literary baccalaureate, while 43% hold a scientific or technical baccalaureate.

Table 2: Reasons for choosing the field of study

	N	***%***
For a personal interest	***21***	***47,7%***
For encouragement by other people	***8***	***18,2%***
For having good job prospects	***3***	***6,8%***
Thanks to my notes	***0***	***0,0%***
I had no choice	***5***	***11,4%***
Other	***7***	***15,9%***
Total	***44***	***100,0%***

The interviewees are divided into two categories according to their vocational status; first, the category of integrated graduates, who said they got a paid job[16] - at the time of the interview; second, the category of non-integrated graduates.

3.1.1. "Integrated" Graduates

There are 57% of respondents, who have declared that they have a job at the time of the interviews (56% for men and 44% for women). Thus, 44% of integrated graduates hold a degree in economics & management (16% for not-integrated), 72% of integrated graduates have pursued their studies in French (58% for not-integrated), noting that 64% hold a scientific or technical baccalaureate (16% for not-integrated). In fact, in this sample, 87% of the surveyed economist graduates hold a scientific or technical baccalaureate bearing in mind that the economics curricula are taught in French. Thus, we can deduce the causal tie between the different "baccalaureate branches", "language of study" and "field of study" ***(See Table 1, Appendix 1)***

[16] Have worked at least one hour during the seven days preceding the interview

In fact, other fields of study are taught in French; namely "public law: French section" and "private law: French section" but with low employment rates. This emphasizes, in addition to the language of study, the idea that studying economics and business management provides students with the solid bases that can enable them to acquire useful skills so as to satisfy the job market needs. That is to say, they have more chances to find a job quickly in comparison with the other profiles. It also clarifies that the graduates having a degree in economics are more likely to get a job in the private sector (82%). However, the public sector remains the main job market for the graduates in private and public law with a rate of 71% for each field ***(See Table 2, Appendix 1)***

Besides, the results have showed that the economists are more likely to get a first job through professional and personal relationships (55%), which show the importance of internships and relationships to get access to the professional life ***(See Table 3, Appendix 2).*** In the same regard, the study of the quantitative data indicates that the majority of the integrated graduates have parents with a higher educational level (28%) and a particular professional status (48%); this illustrates not only the "network effect", which is a benefit for the integrated graduates, but also the parents' ability to better keep an eye on the educational career of their children and make them more practical ***(See Table 1, Appendix 1)***

Regarding the salaries, the average gross monthly salary of the integrated graduates raises to 5176 MAD ***(See Table 4, Appendix 2).*** Knowing that young people working in the public sector carry out the same jobs with identical hierarchical progressions, on the contrary, the private sector's employees do not receive the same salary, do not enjoy the same increases, and do not enjoy the same benefits. This explains somewhat the attractiveness of the public sector, which remains the most favorite sector for graduates regardless of their field of study.

As for the variables related to the employment, the integrated respondents have agreed that their job is inadequate with their skills or educational level. Particularly, 80% of the integrated graduates have emphasized that their salaries do not suit their educational level, 76% have considered the fact that their jobs do not suit their educational level and 60% have considered their professional competences are much elevated if compared with the necessary skills. However, 82% of public sector employees are not planning to seek other employment, while 79% of private sector employees are dissatisfied with their current jobs and are seeking a new one.

3.1.2. "Non- Integrated" Graduates:

As far as the unemployed graduates, they represent 43% of the interviewees. They are mostly formed by: Women (53%); Graduates in private law (63%), Graduates who completed their studies in Arabic (42%), Literary baccalaureate holders (36%), Graduates whose fathers have a low educational level (58%) and an independent professional status (58%). Thus, these profiles allow us to deduce that "literary baccalaureate", "Arabic Studies", " private law " and "lack of fathers' help" are factors that not contributing to career success of graduates ***(See Table 1, Appendix 1).***

However, this professional situation seems to be opted by many of the interviewees, who wish to get access to the public sector and prefer, otherwise, to remain jobless (36%). We have also noticed that 74% of non-integrated graduates have never had a job while only 26% have succeeded to find one. This provides information on the profile of most of non-integrated graduates, characterized by the lack of professional experience.

Regarding the job search, there are a significant number of non-integrated graduates looking for employment (79%); they rely on various job hunting methods: "public contests" seems to be the effective technique adopted by 30% of job seekers; 11% use newspapers advertisements and websites, 9% rely on professional

and personal relationships, 4% consult recruitment agencies such as ANAPEC[17]; whereas, none of the interviewees rely on their faculty considering that this use remains rare in the universities.

3.2. TRAINING – PROFESSIONAL INTEGRATION

It is necessary to indicate at first that almost all the interviewees give great importance to education since it helps them to improve their standards of living. Thus, it is important to make more investment in this field. However, 61% of them think that university degrees, in Morocco, do not help graduates to find better jobs (56% for the "integrated" respondents and 58% for the "non-integrated").

To state the last idea clearly, when the interviewees have been asked about the link between the initial training and the professional integration, their responses can be put into two main categories: first, 26 interviewees do not see any strong link between the training and the professional integration (59%). This opinion has been shared by the majority of graduates included in this survey, especially among jurists. Second, 18 interviewees with a percentage of 41% believe in a positive impact of training on employability.

Table 3: Distribution of respondents according to their views on the link between training and professional integration

The views	Private Law - French	Private Law - Arabic	Public Law – French	Public Law - Arabic	Economics & management	***Total***	
						N	%
No effect	8	6	3	4	5	26	59%
Positive effect	2	3	2	2	9	18	41%
Total	10	9	5	6	14	44	100 %

In fact, some of the interviewees think that the training received at the faculty has a positive effect on the professional integration; they appreciate the public higher education and consider the faculty as an institution that provides free training, delivers state degrees and allows its graduates to work in the public sector, and to become more independent. However, other interviewees believe in the absence of a close tie between the initial training and the professional integration; they consider the fact that the professional experience, personal characteristics and language as well computer skills exert a greater effect on the professional integration.

In spite of these conflicting opinions, 73% of the interviewees believe that they have good long-term career opportunities in Morocco bearing in mind that 82% plan to continue their higher education, and 98% do not have any immigration plans because they refuse totally the idea of going abroad.

3.3. REASONS BEHIND THE GRADUATES UNEMPLOYMENT

According to the responses of the interviewees, there are six different factors which lead to unemployment[18]of graduates in Morocco: the graduates themselves, the government, the educational system of the faculty,

[17] The National Agency for the Promotion of Employment and Skills, Its role is to connect recruiters and job seekers.

[18] Status of a person without paid work, available for employment, and seeking employment (BIT 2000)

corruption, employers and the economic situation ***(See Figure 1, Appendix 3).*** They are presented below in a descending order based on their citation frequency:

3.3.1. The graduates themselves: 17 interviewees indicated this point as the main factor responsible for graduate unemployment. In fact, the respondents blame the graduates themselves because they are obsessed with securing a job in the public sector, taking into account that the government cannot offer job opportunities for all the graduates: "*...The dreams of the university graduates are limited to the public sector, while the government cannot provide job opportunities for all!!! This is not the only sector available to look for jobs!!*" (*Respondent N 6*). They also accuse the graduates who do not attempt to gain more experience and remain limited to the theoretical knowledge acquired at the university. This minimizes therefore their chances to pass the examinations and employment interviews: "*the graduates have many qualifications, but do not develop the necessary skills to get a good job ...."* (*Respondent N 11*). In the same vein, the respondents believe that graduates, who do not work for free as trainees to gain experience and do not seek internships, are responsible as well for their unemployment. Thus, their profiles mismatch the needs of the job market: *"Students are responsible for their unemployment; they remain limited to the theoretical knowledge acquired at the university, do not seek to improve their experience, do not accept low wages and they do not try to develop a personal project .... So they shall bear the consequences ",* (*Respondent N 13*). Similarly, many of the respondents notify that unemployed graduates are not dynamic as they invest no effort to find solutions for their situation, do not try to establish a personal project and they look only for easy ways to make profits. The following comments represent these opinions: "*.....the students who do not diversify their job hunting strategies"* (*Respondent N 14*); *"Young people have become pessimistic; they do not make any effort and wish to be recruited in the public sector"* (*Respondent N 21*).

3.3.2. The Government: According to 16 respondents, who share similar remarks, the government is responsible for their situation; they accuse the politicians who suggest solutions for graduate unemployment as part of their electoral campaign, but they break their promises once they are elected. The category of young people supporting these remarks is especially those who are registered at the Moroccan National Association of Unemployed Graduates (ANDCM)[19]: *"We keep reminding the government of the electoral promises, but it has not carried out any measurement in this regard so far ..."* (*Respondent N 2*); *"I am an unemployed graduate among others, we protest peacefully in Rabat near the parliament to demand more jobs opportunities and bring attention to our demands and right to work"*, (*Respondent N 33*). Similarly, the government is deemed responsible for graduate unemployment because it does not stimulate the economy, does not create enough jobs and does not devote sufficient budgets for the public investment: *"the limited budget devoted to the public investment will not help in creating enough jobs for the large number of graduates"*, (*Respondent N 16*). However, several respondents emphasize that the Government is responsible for graduates' unemployment without providing any particular reason: *"Undoubtedly, the government is the first responsible"* (*Respondent N 17*). The government is also accused for its public policies; the university educational system is not to be blamed alone, but also the whole educational system: *"....The educational counseling is very formal. Language is also a problem; the educational curriculums are taught in Arabic until the high school, but the academic programs at the universities are in French "*, (*Respondent N 44*)

3.3.3. The University System: This is also a very recurrent theme within the respondents' comments; it is mentioned by 15 respondents. They believe that the educational programs are not directed to be more professional in the sense that the modules are not adapted to meet the employers' needs. Thus, they confirm the virtual absence of interactions between the academic content and the economic sphere: *"There is a wide discrepancy between the University and the market supply. My teachers have always promised me that I will quickly find a job thanks to my degree. However, I remained unemployed for 28 months before getting a job.*

[19] The National Association of Unemployed Graduates of Morocco is an organization created in 1991 that brings together graduates from holders of bachelor to PhD in unemployment. The goal is to ensure the integration of its members in the public service.

In addition, my studies are worthless at work" (Respondent N 36), Moreover, many respondents would like to undergo training in private institutions so as to improve their selves, but they cannot afford the school fees. This is coined in the following statements: *"The program is overloaded, we wish to carry out a more vocational training, but we cannot afford the fees to study at private schools ",* (*Respondent N 28*). Finally, this theme aggregates another "child nodes" about the lack of support from the faculty: *"The University does not follow the progress of its students after graduations. I have got first rank in my class during the whole years of studying at the faculty, but I did not receive any encouragement or support afterward... In short, we do not rely on the university to find a job",* (*Respondent N 25*).

3.3.4. Corruption: This theme has been mentioned by 7 respondents who claimed that they were victims or witnessed cases of corruption: *«We do not ask the government to find jobs for us, but I affirm that the job market is not managed in a spirit of transparency and justice"*, (*Respondent N 30*). So, the non-transparency, inequality to have access to employment, unfair employability, cronyism, favoritism and social capital are words related to the concept of corruption. The respondents consider them as forms of corruption that hinder their access to the job market and eliminate the excellent candidates from jobs. Consequently, they are major causes behind the graduates' unemployment: *"lack of transparency in recruitment. Unfortunately, the access to employment is managed unequally and the unfair recruitment still dominates the labor market",* (*Respondent N 5*).

3.3.5. Recruiters: According to six sources, the employers have established more strict standards that should be met in order to get a job; for this reason, they prefer job seekers who have professional experience in specific fields. Similarly, the number of years of experience required by recruiters seems to be the major obstacle for the young job seekers: *"I am a bachelor's degree holder and I'm unemployed!! The doors of the job market are shut in my face just because I don't have five years of experience!! ....»* (*Respondent N 39*). In addition, recruiters favor higher schools laureates than faculty graduates *"Recruiters do not value the qualifications of faculties' graduates, but rather they promote the degrees awarded by private and public schools",* (*Respondent* N 15). So, the respondents perceive that is difficult to convince recruiters of their careers: *"I do not regret my studies; they were of great importance and interesting. I've realized that I am able to adapt to the job ... but explaining this idea to the recruiters remains difficult....."* (*Respondent N 31*).

3.3.6. Economic situation: This theme has also been mentioned by six interviewees that directly accuse the economic situation, which is marked by lack of job opportunities, rapid increase in population growth, and the increasing number of the university graduates: *"... ..The economic situation of the country is unfavorable ....."* (*Respondent N 10*); *"The high number of schools and universities graduates in Morocco",* (*Respondent N 1*).

3.4. PROPOSED SOLUTIONS

A series of solutions has been proposed by our forty four interviewees categorized mainly in three essential points which are shown as follows: The intervention of the government, the strategies adopted by graduates and the measures taken by the faculty (***See Figure 2, Appendix 3***).

3.4.1. Government intervention: This theme is the leader since it has been raised by thirty six of our interviewees. Under this node, ten solutions have been proposed:

Direct recruitment: On the basis of seven references, the interviewees claim that the Moroccan government has to pass a decree in order to recruit holders of higher diploma without having a competition. This solution seems to be effective to fend off the unemployment of young graduates and ensure their integration in the professional life: *"appoint graduates directly without* competition" (*Respondent N 5*).

Fighting corruption: The need to fight corruption, in its various forms (nepotism, favoritism, cronyism ...), is claimed by six references. The government must work urgently to eradicate corruption and should establish more transparency and fairness in employment. Consequently, this issue includes practical measures to stop

the corrupt practices. In other words, the participants asked to review the recruitment procedures in order to ensure the adoption of the merit criterion with transparency and equal opportunities for all, establish anti-corruption parties all over the Moroccan territory, conduct awareness campaigns for combating all forms of corruption and impose severe sanctions on those who are accused of corruption. *"... Also, I propose to conduct campaigns against corruption to raise awareness… every citizen must personally refuse to corrupt or be corrupted ... " (Respondent N 5*); *"The government must severely punish the corrupters and dismiss them if necessary ..."* (*Respondent* N 17).

Education policies: With the same number of references as the previous point (six references), the stress is laid this time on the educational policies adopted by the public authorities that should be subject to a broad reform, especially at the level of language and orientation. Thus, according to the interviewees, the educational programs should be taught in French since the primary school and students should be oriented to the fields of study offering more job opportunities in the future: *" curriculums must be taught in French at primary, »* (*Respondent N 7*).

***Supporting Bachelor's Degree Holders* :** Always with the same number of references (six references), the respondents require support from the government especially for the bachelor's degree holders whose level and education will not offer them more opportunities in comparison with those who have a Master's degree or PhD. In this respect, the interviewees require the adoption of an integrated employment policy in favor of the most affected categories. "*The government must adopt policies to promote self-employment and enable the bachelor's degree holders to find a job because their education and training neither offer them much job opportunities nor allow them to secure their professional careers ...* ", (*Respondent N 1*). In addition, they propose to open a social dialogue with young graduates by giving more importance to their professional future: "*Demand the Moroccan government to devote more attention to the future of young people and create a dialogue between young people and administrative authorities so as to find a compromise*", (*Respondent N 33*). So, the solution proposed by the respondents lies in supporting young graduates, accompanying them and assisting those who are willing to set up their own projects: "*... Understanding the problem of the Moroccan young graduates and supporting them in their future plans ...*" (*Respondent N°3*)

Job creation: According to five references, the Government is invited to open up more job opportunities, develop the private sector and improve the business situation and attractiveness of our economy so as to stimulate the foreign and domestic investors. *"The government must create jobs whether in the private or public sector, recruit young graduates and encourage them ....." (Respondent N* 2). The *Respondent N 3* added: *"the government must develop all the business sectors, create ample jobs opportunities and improve the attractiveness of our country to the foreign investors ..."*

Recruiters: Encouraging and supervising employers remain a good solution which is recommended by two of our references; through exerting more efforts in order to fight against the informal sector. *"Controlling companies, ensuring their respect to the rights of employees and devoting enormous efforts to put an end to the informal sector, are of great importance "* (*Respondent N 22*). *"Raising awareness and encouraging employers to give the graduates a chance in order to bring into practice their theoretical knowledge",* (*Respondent N 31*) *"....Requiring recruiters to sign contracts of 5 or 10 years with the newly hired graduates as well as providing them with the necessary training",* (*Respondent N 15*)

Retirement Age: Among the proposals suggested is lowering the retirement age as a solution to give way to the young graduates: *"... the government should also reduce the retirement age to pave the way to the young graduates",* (*Respondent N 2*)

Good governance and advanced regionalization: Similarly, the rational management of resources, acceleration of the implementation of the advanced regionalization and activation of the principles of good governance remain the urgent solutions that can restore the territorial balance between the regions in order to

avoid the concentration of employment in some regions, to maintain social cohesion and political stability and to alleviate the crisis of confidence in the education system: *"Giving priority to the people of the region by activating the principles of good governance and applying the advanced regionalization ",* (Respondent N 36).

Planning: The "Regional Foresight"; it is a proactive approach applied in Europe, which is used to inform policymakers, build networks and enhance local capabilities for tackling the long-term issues. Thus, this effective mechanism has been proposed to be activated in the field of education for improving orientation and counseling for students. *"In Europe, before training students, they are planning first a prospective study for each student for good orientation. So this study should be implemented in the field of education "(Respondent* N 9)

3.4.2. The adopted strategies of graduates: Several respondents who participated in our survey have proposed realistic solutions that can solve the problem of unemployment among graduates. Twenty respondents have adopted this suggestion with nine proposals mentioned below:

Entrepreneurship: According to four references, entrepreneurship seems to be the real solution to combat unemployment of young graduates. In this regard, the unemployed graduates are invited to create a self-employed status, which offers them the opportunity to launch a professional economic activity: *"Starting their own businesses and becoming entrepreneurs ..."* (*Respondent N 16*)

Changing Mentality: This point has been also illustrated by four respondents who have insisted that the graduates must accept to start from scratch. *"Graduates should change their mentality and convince themselves to look for work everywhere and agree to start from scratch"*, (*Respondent N 21*); *"We must start with any job, whatever the wage is, we can improve ourselves gradually, some of the world's wealthiest people were poor when they started their careers .... a rich background is not the only way to the top; that is why, we have to accept any salary, and start even with the minimum wage, and step by step we will reach our objectives", (Respondent N 6*). In fact, the whole mentality has to be changed to diversify the job hunting methods and to no longer rely on the public sector: *"The mentality prevailing nowadays among graduates is to wait for government employment in order to secure a regular income for living. We need to change this mentality drastically and develop a new pedagogy for students promoted with the spirit of initiative, creativity and entrepreneurship", (*Respondent N 25).

Skills improvement: According to three references, the graduates must develop their know-how skills and competences so as to build up a strong profile in the job market. In fact, the theoretical knowledge that graduates have acquired during their years of study at the university is not enough to find a job in such highly competitive job market. For this reason, the graduates should improve their knowledge and make it regularly up-to-date so as to conform to the different situations: *"... ..The Graduates must keep up with the latest news, and continuously update their knowledge .....» (Respondent N 1)*. Respondent No. 17 added: *".... But graduates must also develop their skills in order to adapt to different situations."*

Internships: The idea expressed in this sub-theme (with three references) is that graduates should seek unpaid internships to sharpen their skills, bring into practice their theoretical knowledge and make contact with professionals so as to discover the professional life as well as its requirements. Thus, they will be able to develop and add value to their CVs: *"..... and the graduates should contact the companies, submit their CVs, and apply for internships to gain experiences, meet people and prepare for other businesses ",* (*Respondents N 11*).

Autonomy and responsibility: Referring to two sources, the comments of the respondents lay stress on the fact that graduates need to be autonomous and responsible. In other words, they should assume the total responsibility for their choices. They have to make rational decisions and be autonomous: *"....on their part, the training's choice must be based on the job opportunities offered in the future."*(*Respondent N 10*); *"Graduates*

should choose what is appropriate for them and should not follow the guidelines of the friends or family ..." (*Respondent N 20*).

Dynamism: The graduates are also invited to be more dynamic, confident and patient: *"... Graduates must be dynamic, innovative and creative..."* (*Respondent N 1*); *"..... At the same time, graduates should have a strong will; especially, to be self-confident and patient "*, (*Respondent N 4*);

Study & scientific research: According to two references, working and pursuing study at the same time remains a rational strategy, with the orientation towards the scientific research: *"..... Graduates have to be interested in scientific research", (Respondent N 1*). *".....working with a bachelor's degree, and in parallel, completing higher education is the effective strategy", (Respondent N 28*).

3.4.3. Faculty Measures: About sixteen references call the faculty to take specific measures, particularly the ones shown below:

Professional training: In line with 9 respondents, faculties are requested to reexamine the programs taught in their campuses and to contract partnerships with professionals in order to satisfy the requirements of the labor Market: *"Reforming the university by ensuring an adequate and specialized training with the involvement of the private sector..."* (*Respondent N 10*); *"The training content should be developed in partnership with professionals and should be updated regularly in order to go hand in hand with the technological and organizational changes of the companies",* (*Respondent N 8*). Respondent N 26 added: "*Imposing internships during the academic studies is necessary"*. The graduates call also for restoring the old educational system and fighting against all forms of corruption which impedes having access to higher education: *"Cancel the LMD system, restore the old system and fight against the discrimination in education ....." (Respondent N 28*).

Employment units: According to six references, the people in charge are required to create a structure of intermediation within the faculty specialized in assisting unemployed graduates: "*The creation of employment units in the faculties will be an effective way to access jobs with good working conditions*", (*Respondent N 41*); "*The faculty must provide facilities managed by motivated leaders to support the young graduates after the graduation and help them to find a good job...", (Respondent N 42*).

Academic reputation: The faculty must also build up a good reputation and boost the profiles of their graduates on the job market: *"enhance the reputation of faculties",* (*Respondent N 35*).

3.5. ANALYSIS & DISCUSSION

The outcomes of our interviews enabled us to collect a wide variety of answers. First, the majority of graduates interviewed do not perceive a close tie between the training and professional integration (59%). They believe that the degree is less important than experience; knowing that job listings deviate the beginners by requiring two years of experience at minimum. That is to say, have a professional experience has become a necessary condition for successful integration into the job market. Thus, they testify that there is a gap between their degrees and the current major professional issues; in other words, their profiles are not adequate with the requirements of the job market. These opinions were predominantly expressed by the unemployed graduates (84%) and were more pronounced among jurists, particularly those majoring in the private law, which shows that the professional situation of graduates influences their perceptions on the causal relationship that can bind the initial training and professional integration. However, comparing the opinions expressed by respondents to their identities described during the quantitative phase, we find that a significant segment of the "integrated" (40%) have ratified this perception by denying a link uniting the training and the professional integration. This is the case of respondents working in the informal sector, allowing us to confirm the same findings according to which the professional situation and working conditions affect the perception of the people concerned.

In contrast, 18 out of 44 respondents perceive a crucial link between the training and professional integration. This judgment has been pronounced by the “integrated” more than the “Non- Integrated” (60% vs. 16%). In fact, at the end of their course in economic or legal science, 41% of the respondents have confirmed that they have useful skills recognized by professionals. According to this group of graduates, the training course of the faculty of law, economics and social sciences of Tangier, allows students to develop a general culture that gives them many major advantages. First, the university students, who successfully complete their course, are very autonomous because they operate in an environment that encourages them to train themselves. Then, studies of the faculty equip graduates with a rigorous methodology that can be directly put into play in the professional world. Consequently, being independent, autonomous and methodical, are all the qualities that enable young graduates to manage projects, take autonomous decisions, anticipate risks, provide original solutions and complete missions with rigor and professionalism. In addition, the integrated graduates, who have a degree in economics, share widely a feeling about their ability to adapt to different work situations. These young graduates believe they are able to quickly acquire technical skills and practices which allow them to develop their adaptability skills. The positive effect of the training acquired at the faculty on the employment has been evoked by the interviewees, who appreciate the public higher education and perceive the faculty as an institution, which provides a free training that awards them a degree enabling them to work in the public sector.

After opening up a discussion with the respondents for further information, we have identified several factors that lead to the unemployment of graduates in Morocco. Thanks to the findings, it has been revealed, that the majority of respondents agreed that young graduates are the first responsible for their unemployment since most of them rely only on the public sector without seeking internships, developing a personal project or improving their skills. These remarks were widely expressed by the graduates, who hold a degree in private law - French section, and economics; they are aware that they are competing with experienced people, who accept to work with the minimum wages.

Other voices put the blame on the government. It is essentially the graduates in public law - Arabic Section, enrolled in the National Association of Unemployed Graduates of Morocco (ANDCM). Indeed, this Association reflects a collective action of unemployed graduates with an insistent claim of integration in the public sector, considering that the government must provide them jobs in the public sector in order to avoid the precariousness of the private sector. This supports the responses of those who judge graduates "to be obsessed with getting a job in the public sector" and remains also in line with descriptive data released during the quantitative analysis according to which 36% of job seekers wish to access the public sector. In this respect, we emphasize that some respondents blame both the graduates and government considering, on the one hand, the fact that the government does not stimulate the national economy and does not devote an operating budget sufficient to create jobs, while they blame, on the other hand, the graduates to be fairly dependent on being recruited at all costs in the public sector after being rejected by the private sector.

The educational system of the faculty has also been criticized since it is responsible for the graduates’ unemployment considering that the training programs do not comply with the requirements of the job Market. Moreover, an important point was raised about the lack of support from the faculty delivering the diploma. This has been clearly noticed in the responses to our question concerning the job search methods according to which none of the surveyed researchers counted on the faculty to help them to find a job since this way is rare. Similarly, the answers to our question about the modes of access to employment mobilized by the “integrated” classifies "the social relations" in the second place after the " competitions", yet, this employment access described by respondents by several terms (Unequal access to employment, unfair Recruitment, favoritism, social capital ...) which are, according to the participants, the forms of corruption that impede the entry to the professional life, eliminate the right profiles and, consequently, are the major factors causing the unemployment of young graduates.

However, it is true that the network offers to the employed graduates more advantages **(MOURJI and GOURCH, 2008),** but it is seen rather as a kind of a guarantee for the employer who prefers to choose to hire someone recommended by its network against a good productivity (**BOUGROUM and IBOURK, 2004).** So, the standard signals such as the diploma is not enough, and the networks are the clues that reduce the uncertainty of the employer. Other clues, which remain very significant by recruiters, are showed especially in the professional experience of the candidates, the institution awarding the degree and the specialty **(Signal theory).** However, these clues are presented for most of our respondents as barriers that limit their employability; that is why they put the blame on the recruiters favoring the job seekers who have a professional experience in specific fields, and discriminating the faculty graduates in favor of the high schools graduates. These clues, which recruiters require, hinder the professional success of the faculty graduates, and remain one of the causes behind unemployment among young graduates.

With the same frequency citation as "recruiters", the economic situation has been identified as responsible for graduates' unemployment since lack of jobs, the increasing rates of population growth in addition to the increasing the number of the faculty graduates are altogether factors minimizing the chance of being integrated into the professional life.

The fact of examining the different causes of unemployment among young graduates listed by our interviewees explains the plurality of the proposed solutions and measures to be taken against this problem either by public authorities, graduates or representatives of the faculties. Initially, the interviewed graduates propose a set of proactive strategies to be adopted particularly by the authorities. The first strategy is demonstrated in the direct access to the public sector and without competitions. Indeed, in 2011, 4300 unemployed graduates who hold Master's and doctoral degrees have been recruited directly by the public administration by virtue of an exceptional and temporary decree. This direct recruitment operation was severely criticized by representatives of the Moroccan government since it has accumulated many problems, has aimed at reducing unemployment among this category and has not met the real needs of the public administration, while other graduates still persist to demand direct recruitment without competition. Also, among the requests of the Association of Unemployed Graduates of Morocco (ANDCM) the implementation of practical measures by the government to combat the practice of corruption. This has to do with reviewing recruitment procedures to ensure the adoption of the merit criterion with transparency and equal opportunities, conducting campaigns against all forms of corruption and imposing severe sanctions against those suspected of corruption.

Furthermore, the graduates recommend that the government should implement a broad educational reform. On the one hand, the educational programs should be taught in French starting from the primary school. On the other hand, students should be oriented towards branches of study, which can offer them job opportunities after the graduation. In fact, the Moroccan education system has serious problems and is regularly criticized by all actors of the economic life. The graduates perceive this through the difficulties of the students to express their ideas in writing and orally on general subjects or on their training fields and the difficulties to be converted from Arabic into French after the high school. This is mostly a linguistic crisis that must be the subject of a broad reform to bring about a linguistic transition between secondary and higher education so as to establish an efficient education system. Thus, the graduates propose a reform aiming primarily at a qualitative improvement of the current educational system by ensuring openness to foreign languages including French and English. The same concern arises at the orientation policies. Indeed, students in Morocco benefits from the counseling services provided by a council created by a public service, but some still devaluate the quality of those services since they do not provide enough information on the promising jobs for the future. As a result, this reinforces social inequalities and causes problems for the employers who do not find the suitable profiles. To meet these new expectations, radical reforms are needed to be implemented. The public authorities must therefore establish a public body responsible for developing a new guidance policy

during all stages of student life with another method that has been announced by some of the interviewees; called "Regional Foresight".

The graduates who feel devalued in comparison with the Masters and PhD holders require also a support dedicated specifically to the bachelor's degrees holders. It is worth mentioning in this regard that the direct recruitment operation conducted in 2011 concerned exclusively the holders of Masters and PhD degrees, which led to massive protests by the unemployed bachelor degree holders that claim the similar treatment. Thus, our young interviewed graduates perceive that they are discriminated in comparison with other levels. For this reason, they propose opening a social dialogue and adopting an integrated employment policy in favor to the holders of a bachelor degree. In fact, the social dialogue seems to be an effective means in order to establish peace. In this regard, it should be recalled that the Moroccan Constitution of 2011 has made the participatory democracy one of the foundations of the constitutional system of the Moroccan kingdom. Thus, the meeting of government representatives with young graduates will undoubtedly consolidate social peace, debate the issue of employment and achieve mutually agreed.

Additionally, our participants recommend to the government to create more job opportunities by opening more competitions, developing the private sector, improving the business climate and the attractiveness of our economy to attract the interest of foreign and domestic investors. Indeed, our economic system is deemed unable to absorb new entrants to the labor market and the informal sector still prevails. Moreover, the jobs created are of a so low quality, and the transition to another job which is more stable and secure is very difficult in a world marked by strong competition. So, supporting investment, strengthening the business climate, encouraging entrepreneurship, fighting against the informal sector and accelerating the rate of implementing the major structural projects are the serious challenges to creating a more efficient and inclusive job market. Also, the recommendations call on the government to encourage companies to be engaged in the process of vocational training in order to reduce the inadequacy gap between supply and demand. In fact, the establishment of a system of vocational training in the professional environment is still able to satisfy the economic and social development needs of our country. The state must provide contracting platform with the various stakeholders in the operation of training and qualification of human capital.

Among the solutions proposed by the people concerned, there is the retirement age decrease to pave the way to young graduates. Also, the rational management of resources, implementation of the advanced regionalization and activation of principles of good governance remain urgent solutions to restore the territorial balance between regions and to avoid the concentration of employment in some regions.

On their part, the institution awarding the degree and the graduates remain closely involved to achieve a successful professional integration. On the one hand, the faculties in general suffer from an enormous lack of resources and materials and are not able to provide an operational and effective training for students, adapted to the level of training sought by recruiters. So, respondents ask the Faculty to be closer to the professional realities and to enter into partnerships with professionals for a possible collaboration. On the other hand, the lack of dynamism and innovation of young graduates has widened further the gap between the needs of supply and demand. In fact, young graduates believe greatly that being awarded a degree is everything, but rather it is just the beginning. In universities we learn knowledge, whereas experience teaches us the "know-how" skills. Similarly, unemployed people must create their own activities instead of waiting employment in the public or in the private sectors and they should spend more time at the internship to acquire the skills and experiences currently required by companies.

5. CONCLUSION

The present study has aimed at investigating the viewpoints of the Moroccans graduates regarding the effect of training on the professional integration. The Interviewees represent a heterogeneous group using various strategies which allowed us to collect a wide variety of answers. First, most participants do not perceive that

there is a strong tie between the training and professional integration, they illustrate that their training does not go hand in hand with the current major business requirements. Further, the professional experience is more important than the degree. However, the respondents, who believe in a positive relationship between training and employment, consider that university graduates are autonomous, methodical and advantageous in comparison with other profiles, by the fact that they have a degree recognized by the State that can allow them to work in the public sector.

As far as the key factors that the respondents have identified to be the causes of the graduates' unemployment in Morocco, we find the graduates themselves, the government; the educational system of the university, the corruption, the recruiters and the economic situation of the country. This explains the plurality of the proposed solutions regarding measures to be taken against this social phenomenon. In fact, the results have important political implications suggesting the need to ensure a direct access to the public Sector and without competitions, combating the practice of corruption, conducting drastic educational reforms, minimizing the retirement age and accelerating the implementation of advanced regionalization as well as activating the principles of good governance. Policymakers are also required to adopt an integrated employment policy in favor of bachelor degree holders.

Regarding the university, the respondents suggest to their representatives to enter into "faculty-business partnerships" to be closer to the professional realities and to launch programs with rich and diverse content with suitable illustrations and appropriate teaching methods. Similarly, unemployed people must create their own activities instead of waiting for employment in the public or private sectors. They are also called to invest more in the process of professional training and agree to work in other domains in order to have a rich professional experience.

All in all, we have found that the success to strike a balance between higher education and professional life remains a shared responsibility. Governments, universities and graduates are more than ever called to bridge the gap between working life and academic studies. However, despite these contrasting views, most of the respondents have an academic project and plan to pursue their higher education which enables us to deduce that studying still maintain their social values. The graduates intend to increase their level of education in order to boost the profitability of their diplomas which proves the human capital investment theory.

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SOME EEFECTS OF ECONOMIC LIBERALISATION ON FORMAL MANUFACTURING INDUSTRIES IN THE CITY OF NAIROBI, KENYA

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ABSTRACT
This paper emanates from a larger study undertaken for a PhD Thesis. One of the key objectives was to establish the effects of economic liberalisation on formal manufacturing industries in the City of Nairobi, Kenya. The focus of the study was on the food processing, textiles and leather sectors. A sample of110 enterprises were randomly selected out of a sampling frame of 310 enterprises. A comparison was made between a pre-liberalisation period (1980-1992) and a post-liberalisation period (1993-2005). Research findings indicate that the liberalisation of Kenya's economy had negatively impacted on formal manufacturing industries in the study area, during the time of the study. It had contributed to some decline in the demand for local manufactured products due to intensified competition from international products that were deemed to be of a higher quality and were competitively priced. A liberalised economy was also linked to shifts in employment structure that tended to reduce the volume of labour engaged as well as general overall increase in production costs.

KEY WORDS: Economic liberalisation, formal manufacturing industries, pre-liberalisation, post-liberalisation

1.0 INTRODUCTION

From the 1980s, countries in Sub-Saharan Africa have shifted their economic development policy from state intervention in economic affairs and public ownership of enterprises to privatization and liberalization of theireconomies (Sundaran and Rudigner 2008, Mwaba, 2000, Bleaney *et al*. 1995). The policy shift was influenced by both the World Bank and the International Monetary Fund, which advocated for economies that were outward looking and which eliminated subsidies and controls as well as letting market forces determine the prices of goods and services (Sundaran and Rudigner 2008).

As far as the Kenya economy is concerned, its performance since independence has been mixed. After attaining independence, the Government of Kenya set out its objectives for attaining economic growth in Sessional Paper No. 10 of 1965 on *African Socialism and its Application to Planning in Kenya* (Kenya, Republic of, 1965). Accordingly, the objectives sought rapid economic growth through public sector investment, encouragement of smallholder and large scale farming and by providing incentives to encourage private (foreign) investment. In the period 1964-1973, Kenya's economy grew by an average of 6.5%. However in 1973, the world oil prices were increased precipitating a crisis and the economic growth declined to 5% (Kenya, Republic of, 1974).

Between 1974 and 1986, Kenya's economic performance continued to decline. The agricultural sector experienced a decline due to inappropriate agricultural policies, inadequate credit and poor international terms of trade. The industrial sector became uncompetitive due to the limitations of the import substitution policy that was practiced and the rising oil prices in the world market. Lack of export incentives, tight import controls and foreign exchange controls made Kenya's investment climate less attractive. These problems culminated in the drawing up of Sessional Paper No. 1 of 1986 on *Economic Management for Renewed Growth* (Kenya, Republic of, 1986). This policy document sought to enhance economic recovery and growth through a process

of economic liberalisation. Sessional Paper No. 1 of 1986 proposed a number of fiscal and monetary policy reforms that were far reaching in terms of opening up the economy.

In the beginning of the 1990s several economic and political reforms were introduced in Kenya. These included the privatisation of parastatals, the liberalisation of financial and energy sectors, price decontrols and the phasing out of import controls. The main thrust of the reforms was to effect a shift from highly protected domestic market to a more competitive environment that would facilitate increased use of local resources, promote employment creation and expand exports (Wignaraja and Ikiara 1999). However, due to the slow pace of implementation of economic and political reforms, donors froze aid to Kenya in November 1991 which aggravated the country's economic crisis and balance of payments deficits. In 1993, the Government of Kenya embarked on a major programme of economic reform and liberalisation. A series of economic measures were undertaken with the assistance and support of the World Band and the International Monetary Fund. As part of the economic reform and liberalisation programme, the government eliminated price controls, import licensing and foreign exchange controls. A number of public companies were privatised and changes were introduced into the fiscal and monetary policies.

There was marked economic growth in the period 1994-1996 with Kenya's gross domestic product (GDP) averaging 4% per annum (Export Promotion Council, 2001). Despite the reforms, economic growth rates assumed decline trends from 1997 culminating into a negative growth rate of 0.3% in 2000. Between 2001-2005 the rate of growth averaged 2.8% (Kenya, Republic of, 2002, 2003, 2004, 2005, 2006). This paper evaluates some of the effects of economic liberalization on the food processing, textiles and leather sectors in the City of Nairobi, Kenya.

1.1 MATERIALS AND METHODS

The requisite data for this study was collected from both primary and secondary data sources in 2005. A sample size of 110 enterprises out of a sampling frame of 350 enterprises were selected using a simple random sampling design. Primary data was obtained using questionnaires, informal interviews and field observations. Secondary data was collected using both published and unpublished data sources. Data was analysed using both descriptive and inferential statistics.

The study was carried out in the City of Nairobi in Kenya (Figure 1). The City of Nairobi lies between latitudes1° 17' S, and longitudes 36° 49' E and covers an area of 696 square kilometres. The study area lies at an altitude of 1670 metres above sea level. At the time of the research the study area was divided into eight administrative divisions namely: Makadara (23.06 km2), Kasarani (86.43 km^2), Central (10.71 km^2), Embakasi (203.63 km^2), Kamukunji (12.11 km^2), Westlands (97.37 km^2) and Dagoretti (38.63 km^2) and Kibera (223.15 km^2).

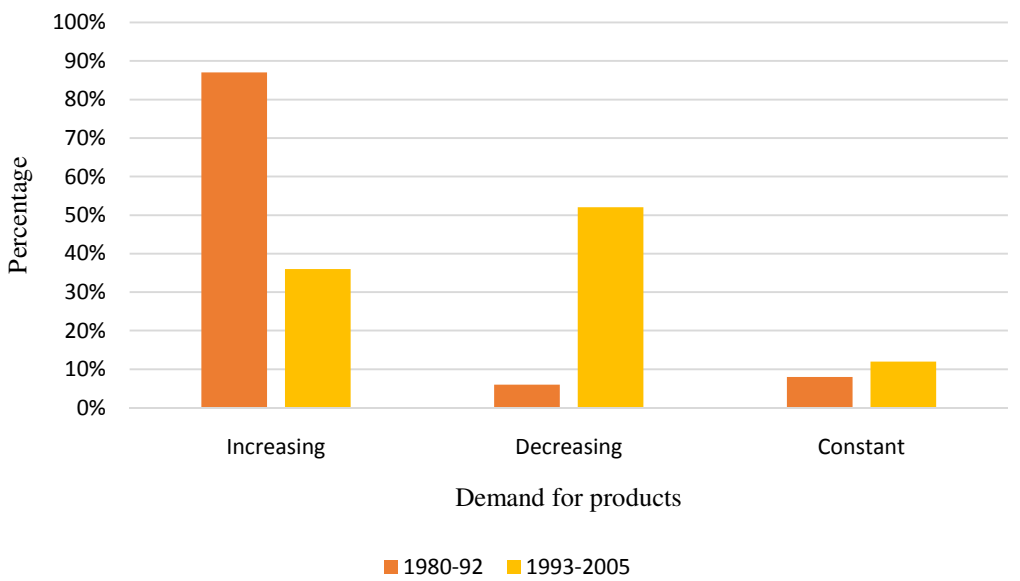
Table 1: Increasing demand for manufactured products in the periods 1980-1992 and 1993-2005

Industry	Period			
	1980-1992		1993-2005	
	Frequency	Percentage	Frequency	Percentage
Food processing	27	60%	28	65.12%
Textiles	10	22.22%	9	20.93%
Leather	8	17.78%	6	13.95%
Total	**45**	**100%**	**43**	**100%**

Source: Fieldwork 2005

In terms of overall demand for manufactured products for all the industries, an overwhelming majority of the respondents (87%) indicated that their demand had increased while only 6% and 8% indicated that their demand had decreased and remained constant, respectively, in the period 1980-1992. Figure 2 shows that there was a reversal of this trend in the period 1993-2005 with only 36% of the respondents reporting a rise in demand for their products. During the same period, a significant proportion of the industrialists (52%) indicated that the demand for their products had declined and only 12% of the respondents indicated that their demand had remained constant.

Figure 2: Overall demand for manufactured products in the periods 1980-1992 and 1993-2005



Source: Fieldwork 2005

Industrialists in the study area were asked to account for the decline in demand for their products in the period 1993-2005. Four factors were identified. These are: the liberalisation of Kenya's economy; poor economic performance; the high costs of production and the inaccessibility of external markets. To establish the nature and strength of the relationship between the decline in demand for manufactured products and the four factors, both bivariate and partial correlation coefficients were generated using the SPSS software. Table 2 shows the correlation matrix for the factors.

Table 2: Correlation matrix for factors contributing to decline in demand in 1993-2005

	V1	V2	V3	V4	V5
V1	1.000				
V2	0.742	1.000			
V3	0.656	0.211	1.000		
V4	0.631	0.332	0.411	1.000	
V5	0.342	-0.301	0.401	0.311	1.000

V1: Decline in demand
V2: Liberalisation of Kenya's economy
V3: Poor economic performance
V4: High production costs
V5: Inaccessibility of external markets

Source: Fieldwork 2005

There is a strong relationship between the decline in demand and the liberalisation of Kenya's economy. A correlation coefficient of 0.742 between the two factors is indicative of a strong positive relationship. This implies that the liberalisation of Kenya's economy had led to a decline in demand for products in the study area. Industrialists indicated that the liberalisation of the economy had led to increased competition, especially from foreign enterprises, some of which were establishing branches in the study area or entering into franchising arrangements with local enterprises. They further noted that the production costs for some of the manufactured goods from other countries in Asia, Europe and North America were much lower and this translated to lower unit prices for the products. For instance, Strydom (2000) has noted that the root cause for the decline of South African footwear industry is cheap imports, primarily from Asia, flooding the local market. This has forced many of the local producers out of the market with others significantly scaling down their operations. The market for textile and leather products was been eroded by the proliferation of imported second-hand products which were not only cheaper but were favoured by consumers. Ongile and McCormick (1996) have noted the role of second-hand clothes in explaining the decline in demand for new clothes in Nairobi's garment industry. They argue that the weak domestic demand experienced by Nairobi garment manufacturers is partly due to second-hand clothing whose prices are lower and whose quality is perceived to be high.

This paper explores the relationship between the liberalisation of Kenya's economy and the competition experienced by manufacturing industries in the study area. It has been noted that there is a close relationship between economic liberalisation and increased competition to previously protected industries in Africa (McCormick *et al.* 2002). Respondents in the study area were asked whether they had experienced any competition to their products in 1980-1992 and 1993-2005. They were also required to compare the intensity of competition between the two periods. From the research findings, it is apparent that all the enterprises in the study area experienced some form of competition for their products during the two periods. Table 3 shows the

sub-sectors that experienced more intensive competition in the period 1993-2005. Accordingly, the food processing sub-sector experienced the highest amount of competition while the leather sub-sector experienced the least.

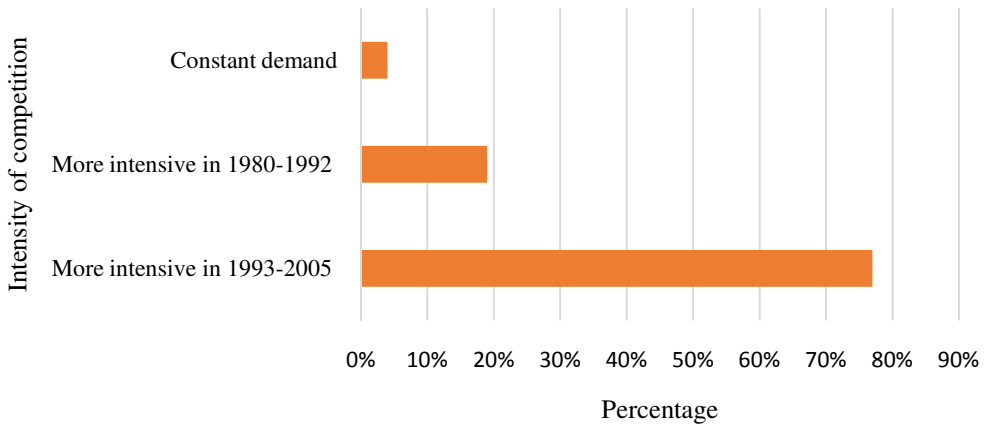
Table 3: More intensive competition in the period 1993-2005

Industry	Frequency	Percentage
Food processing	21	52.5%
Textiles	10	25%
Leather	9	22.5%
Total	**40**	**100%**

Source: Fieldwork 2005

A comparison of the intensity of competition between the pre-liberalisation and post-liberalisation periods indicates that a high proportion of the manufacturing industries operating in the study area (77%) noted that competition was more intensive during the post-liberalisation period. Figure 3 indicates that only 19% of the industries noted that competition had been more intensive in the pre-liberalisation period while 4% indicated that they had not experienced any change in competition for their products.

Figure 3: Intensity of competition between the periods 1980-1992 and 1993-2005



Source: Fieldwork 2005

It is therefore apparent that manufacturing industries in the study area experienced more competition during the post-liberalisation period. To determine the statistical significance of the observed data, the chi-square statistic was computed. Table 4 shows the observed and expected frequencies.

Table 4: Observed and expected frequencies

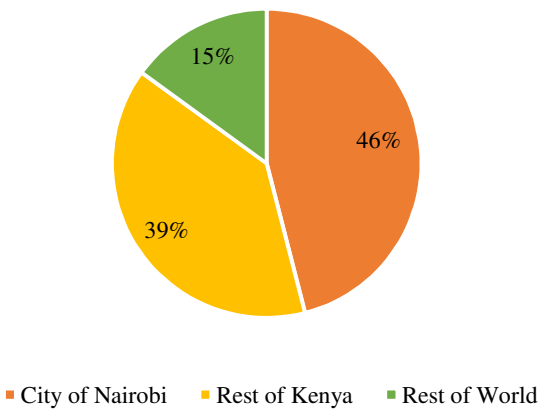
Intensity of competition	Observed frequencies	Expected frequencies
More intensive in 1993-2005	40	17.33
More intensive in 1980-1992	10	17.33
Constant demand	2	17.33
Total	**52**	

Source: Fieldwork 2005

At 0.05 significant level, and with 2 degrees of freedom, the computed chi-square value is 46.32 while the critical value is 5.99. This implies that there is a significant difference in the intensity of competition between the pre-liberalisation and post-liberalisation periods. Manufacturing industries in the study area experienced more competition during the post-liberalisation period.

The industrialists were asked to identify their main source of competition. Figure 4 shows that 46% and 39% of those interviewed indicated that their main sources of competition are enterprises located in rest of the world and City of Nairobi, respectively. Only 15% of the industrialists faced competition from enterprises located in the rest of Kenya.

Figure 4: Sources of competition for the enterprises in the Study Area



Source: Fieldwork 2005

The industrialists in the study area clearly indicated that a lot of competition they faced especially during the 1993-2004 period was from foreign enterprises, with the liberalisation of Kenya's economy. Some of the foreign enterprises had established their industries in the study area while others had entered into franchising agreements with local industrialists. Under such agreements, local industries are granted rights to market (in some instances to manufacture) products of foreign enterprises. It was also noted that the growing availability

of imported new clothes sold in exhibitions in the city centre had contributed to the intensified competition in the textiles industry. This has also been observed by McCormick *et al.* (2002).

The link between the liberalisation of Kenya's economy and the employment structure of the food processing, textiles and leather enterprises within the City of Nairobi was also explored. It was envisaged that the liberalisation of Kenya's economy would lead to shifts in the employment structure of the enterprises. Research findings indicate a normal distribution of employees among the enterprises, with relatively high concentration in the 50-99 employees, 20-49 employees and 100-199 employees categories (Table 5). These categories account for 26%, 22.1% and 20.2%, respectively of the enterprises. The 1000+ employees category accounts for only 1% of the enterprises.

Table 5: Employment in manufacturing industries

Number of employees	Frequency	Percentage
1-9 employees	11	10.6%
10-19 employees	12	11.5%
20-49 employees	23	22.1%
50-99 employees	28	26.0%
100-199 employees	21	20.2%
200-499 employees	6	5.8%
500-999 employees	4	2.9%
1000+ employees	1	1%
Total	**106**	**100%**

Source: Fieldwork 2005

Industrialists interviewed in the study area were asked whether they have significantly varied the volume of labour engaged in their enterprises. Accordingly, in the period 1980-1992, 81.3% of the industrialists indicated that they had varied the number of employees engaged in their enterprises. However, in the post-liberalisation period, a slightly larger number of the enterprises (91.8%) indicated that they had varied their employment. With regard to the nature of the variation, 95% and 5% of the industrialists indicated that they had increased and decreased employees, respectively in the period 1980-1992. This contrasts with the period 1993-2005 when 59.8% and 40.6% of the industrialists indicated that they had decreased and increased employees, respectively, as shown in Table 6.

Table 6: Variation of employees in the period 1980-1992 and 1993-2005

Nature of variation	1980-1992		1993-2005	
	Frequencies	Percentage	Frequencies	Percentage
Increase in number of employees	38	95%	57	59.4%
Decrease in number ofemployees	2	5%	39	40.6%
Total	40	100%	96	100%

Source: Fieldwork 2005

The chi-square statistic was computed to determine whether the observed differences in the nature of variation of employees were significant. Table 7 shows the observed and expected frequencies.

Table 7: Observed and expected frequencies

Nature of variation	1980-1992		1993-2005	
	Observed frequencies	Expected frequencies	Observed frequencies	Expected frequencies
Increase in number of Employees	38	27.95	57	67.06
Decrease in number of Employees	2	12.06	39	28.95

Source: Fieldwork 2005

At 0.05 significant level, and with 1 degree of freedom, the computed chi-square value is 17.02 while the critical/tabulated value is 3.84. It may be concluded that there is a significant difference in the nature of variation of employment between the periods 1980-1992 and 1993-2005. The number of employees engaged in manufacturing declined in the post-liberalisation period.

Research findings indicate that the volume of labour engaged by manufacturing industries in City of Nairobi in the post-liberalisation period, 1993-2005 declined. Various reasons were cited for this decline. 65.5% of industrialists indicated the liberalisation of Kenya's economy with the associated effects of increased competition and reduced market, was responsible for the reduction in the volume of labour engaged in their enterprises. This finding has been collaborated by Mengstae and Teal (1998). In a study on trade liberalisation, regional integration and firm performance in Africa's manufacturing sector, Mengstae and Teal (1998), established a close link between economic liberalisation and a fall in volume of labour employed engaged. An analysis of five manufacturing sectors (food processing; textile and garments; wood and furniture; and, metal working and machines) in eight African countries reveals that in nearly all levels of the formal sector, employment was falling during the post-liberalisation period.

This study attempted to establish whether manufacturing industries in the study area had experienced any significant variations in the production costs between the periods 1980-1992 and 1993-2005. Accordingly, 55.56% and 64.15% of the food processing industries experienced an increase in production costs in the pre-liberalisation and post-liberalisation periods, respectively. Fewer industries within textiles and leather subsectors reported an increase in production costs in the post-liberalisation period as shown in Figure 5.

At 0.05 significant level, and with 1 degree of freedom, the computed chi-square value is 23.72 while the critical/tabulated value is 3.84. It may therefore be concluded that there is a significant difference in production costs between the pre-liberalisation and the post-liberalisation periods. More industrialists reported a rise in these costs in the post-liberalisation period.

A relatively large proportion of the industrialists in the study area linked the increasing production costs in the post-liberalisation period to the effects of the liberalisation of Kenya's economy. The industrialists noted that the result of increased competition (associated with liberalisation) was increased expenditure in advertising; acquisition of new and better technology as well as changes in product characteristics.

CONCLUSION

It has been established that the liberalisation of Kenya's economy negatively affected food processing, textiles and leather industries in City of Nairobi at the time of the study. It contributed to a decline in demand for the manufactured products due to intensified competition to the products of the respective industries. The liberalisation of the economy was also associated with a decline in employment in the respective enterprises as well as increased production costs experienced by the industrialists.

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TERRITORIAL ORGANIZATION AND IMPROVEMENT OF TRANSPORTATION OF PASSENGERS IN LANKARAN-ASTARA REGION OF AZERBAIJAN

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Abstract

The article deals with the issues of development, territorial organization and improvement of transportation of passengers in Lankaran-Astara economic-geographic region of Azerbaijan. The role of this service and its impacts on other social activities are indicated. State of highways and the implemented relevant governmental works are analyzed in detail. Corresponding recommendations on improvement and efficient organization of transportation of passengers in Lankran-Astara are given.

Key words: highway, transportation, reconstruction, asphalted, bus service

1. Introduction

Transportation of passengers is one of significant branches of social service. Transportation of passengers serves for movement of population of a country or a region from one place to another. Through daily transporting population for a shorter distance, it also satisfies demand for qualified personnel in manufacturing enterprises, social facilities and administrative offices. This area of service contributes to satisfaction of aesthetic and other needs of population, too. Transportation of passenger co-regulates functioning of other economic activities such as industries and construction businesses, as well as normal activity of other areas of social infrastructure. Quick and timely delivery of passengers to destinations provides harmonious and continuous development of manufacturing enterprises. Delay of vehicles of transport due to various factors such as natural disaster, accident and destruction, and also traffic jams may lead to temporal break of connections, delay in arriving of workers to workplace, and cause labor efficiency to be lower.

Level and efficiency of organization of transportation of passengers is of great importance for non-manufacturing areas and social activities. For example, mass character of flows of tourist significantly depends on quality and level of transportation of passengers. Territorial organization of manufacturing and non-manufacturing areas makes necessary the corresponding development of this service. The development of mentioned areas usually becomes available only after successful creation and management of branches of transport. Students, pupils, staffs of different specialties, etc. use services of motor transport or railways to arrive destination. In this regard, efficient and improved organization of transportation of passengers is topical particularly for territories with extreme and unfavorable environmental condition. Level of development of transportation of passengers is socially important issue as some part of population, including economically non-active part of population and pensioners that have not a private car can use public transport.

Development of service of transporting passengers is an issue of demographic importance as well. It plays an important role in daily life of cities and also urban-type settlements, as well as large rural settlements. It is not by chance that larger settlements with much population number are situated near major highways and railways. Demographic and economic development of a settlement usually is impeded if it is located far off major highways. Transportation of passengers is an integral part of small business activities and daily lifestyle of population. Transport relations contribute to economic development, and meanwhile are regarded as means of convenience. Development of many branches of social sphere such as tourism is directly depending on transportation of passengers.

2. Transport areas of research object

The territory of Lankaran-Astara is a compositional part of the Great Silk Road, revived in contemporary period basing on intergovernmental cooperation among countries of the region and through the development of the TRASEKA project. In this regards, the increase of the role of the Lankaran-Astara economic region in both domestic and international transportation of passengers is one of topical issues of transport sector of Azerbaijan.

The territorial organization of transport areas and the improvement of service of transportation of passengers is one of most key factors in economic and social development of Lankaran-Astara. Advantageous geographical position of the economic region affected the development of railway, motor transport, pipeline and partly sea transports. The territory is passed by the Baku-Osmanli-Astara railway line (Mammadov, p.363).

Railway is very important kind of transport in terms of the realization of transportation of passengers both domestically and at interregional scale. In Lankaran-Astara, the overall length of railways is 100,5 km, or about 5% than that of the country. Stretching from north to south, the railway line of Baku-Osmanli-Astara favorably influences the development of rural and urban settlements in the territory. The growing density of settlements is evidently observable up to 10 km and much more off the railway line. The railway line plays a role of connector between motor transport and sea transport. The length of railway line per 100 sq.km makes up 1,6 km in the region. Maintenance with railway line is much more in Lankaran-Astara compared to other economic regions of Azerbaijan (Mammadov, p.363). The above-mentioned railway line passes the territory of administrative regions of Lankaran, Masalli, Astara and Jalilabad, playing great role in the economic and social development of these units of territory.

35,8% (36 km) of railway lines falls to the share of Lankaran economic region, while the rest is shared by Masalli (29,8% or 30 km), Jalilabad (16,9% or 17 km) and Astara (17% or 17,5 km). (Z.M, s 364). According to the latest data, these indicators are slightly different, making up 19 km by Astara, 36,2 km by Masalli, and 23,5 km by Jalilabad.

The regional importance of railway stations of Astara, Gamishlig (former Gamishovka), Lankaran, Novogolovka and Liman in transportation of passengers is high. In particular, the role of Lankaran and Astara is greater.

Favorable geographical condition of the Lankaran railway station enables cities of the region to expand their economic and social influence. The development of railway contributes to development of other branches of transport as well.

Administrative centers and adjacent villages in the Lankaran-Astara region benefit from the Baku-Osmanli-Astara railway line. One of advantages of railway over other branches of transport is that trains are rendering transportation service to passengers all day long, connecting the region with the capital Baku city and satisfying needs of passengers with heavier load.

It is mentionable that the rise of level of the Caspian Sea and the enlargement of territory of marshes led to partial inundation in the territory of railway stations of Astara, Lankaran and Liman in 90s. Related risk increases expenditures assigned for keeping railway and its facilities safe.

Railway transport has strategic importance for the Lankaran-Astara economic region in general. Electrification of the Osmanli-Astara line and the increase of transportation of passenger are needed.

In the region, motor transport plays an important role in transportation of passengers, too. Relevant significance of motor transport has been increased in the year of independence, and especially in recent years. Thus, turnover of transportation has been grown. Widespread of plain relief, much less occupation of mountainous areas with extreme natural condition compared to other regions of the country, as well as the relatively less inclination of slopes are considered positive factors in terms of development of motor transport and also reduction of costs to be spent to transport facilities. Close location of administrative regions to each other favorably affects transport relation among them. Motor transport bears big responsibility in the region as

it contributes to establishment relations between populations of mountainous (the regions of Lerik and Yardimli) and lowland-based (Lankaran and Astara) enterprises, entities and facilities.

3. State of highways

Analysis of access to motor transport gives the basis to come to the conclusion that the extent of coverage with highways is higher in Lerik region where the length of highways and country roads per 100 sq. km makes up 64 km. This is so because villages are unevenly dispersed through the territory of this administrative unit of area compared to other areas. The corresponding indicator is 42 in average by Lankaran-Astara region, while 55 km in Yardimli, 51 km in Masalli, 45 km in Astara, 28 km in Lankaran and 26 km in Jalilabad. (Zahid Mammadov, p.369). As for respective indicator per 1000 persons, it is higher in Lerik (13 km) and Yardimli (9,4 km).

Out of overall length of highways of state importance, 25 km is shared by Masalli, 94 km by Lankaran and 25 km by Astara region. The highways of Masalli-Yardimli (14 km), Lankaran-Masalli (18 km), Lankaran-Lerik (14 km), Liman-Sara tower (22 km), Astara-Gamishlig (20 km), Jalilabad-Novogolovka (14 km) and others allow transport goods and passengers in various distances, as well as efficiently use human resources in the region.

It is remarkable that the overall length of the Baku-Astara highway is 210 km, and it is included into the highways of third category.

Most of highways of state importance are considered highways of third category. The regions are different for motion intensity of automobiles. Motion intensity is 2000 automobiles in Astara, while it is 5000 automobiles in Masalli region. The figure equates 2800 in the Masalli-Lankaran highway, as well as 860 in the Masalli-Yardimli highway. The quality of highways is the main factor affecting the indicator of intensity of vehicles. In the meantime, circle of influence of major highways and railway lines is much more (up to 30-40 km).

The quality of highways is considerably determined for the condition of their surface. 11,8% of the highways is asphalted and concreted, as well as 17,2% is black-covered, 38,5% is gravel-covered, and 32,5% is soil roads in the region. The highways of state importance are asphalted, of which 28,4% are stretched in Lankaran, 28,3% in Masalli, 31% in Jalilabad, 22,3% in Lerik and Yardimli regions.

The length of highways of state importance makes up 31 km in Astara region. In Masalli region, the overall length of highways makes up 330,2 km, of which 11 km are of second class, 102,4 km are of third class, 66,8 km are of fourth class, and 150 km are of fifth class.In the territories of mountainous Lerik and Yardimli regions, the differences between highways in terms of quality and modernity are much more.

In Lerik region, third class-highways of state importance makes up in total 68 km. Of these highways, 54 km are asphalted and concreted, and 11 km are gravel-covered. Four- and five-class highways of local importance makes up 550,5 km, of which 3 km are asphalted, 27 km are black-covered, 316 km are gravel-covered, and 204,5 km are soil roads.

In Yardimli region, the highway of Masalli-Yardimli-Deman of state importance is 72 km in length. Of this indicator, 26 km are third-class, 24 km are four-class, 22 km are five-class highways. The rest 362 km are five-class roads connecting rural municipalities. In Lankaran-Astara region, such roads are playing significant role in establishing and developing relations between villages, as well as between villages and centres of administrative regions.

Highways of local importance make up 274 km in length, or 11% than that of the economic region. About 40% of local highways are soil-made. Technical quality of local highways is regarded as four- and five classes. The most important highways of the region include Liman-Boladi-Zovlya (12 km), Serenada-Remran-Tyuada (25 km), Vilvan-Guynagir-Tudurkəndi (17 km), Doryanguynagir-Boliton (15 km), Sholadagyudsha-Govkhova-Tyukavilya (20 km), Geradani-Gavzova (7 km), Gafgani-Loj-Shosse (6 km), Viravul-Marso (8 km), Germatuk-Viel-Siyavar-Astara (12 km), Shosse-Masalli (13 km). They play an important role not only in transportation of passengers but also trade and manufacturing relations.

In Astara region, 3/5 part of the local highways are soil roads. The more important highways in terms of transportation of passengers include Astara-Amia (9 km), Alasha-İdvi-Memkan-Shosse-Gamishlig (24 km), Shuvi-Archivan-Gamishlig (12 km), Alasha-Artisha (8 km), Gamishlig-Shosse-Lankaran-Astara (7 km), Vugo-Tulogovan (11 km), Kijaba-Buzivand (12 km), Alasha-Sarhad (11 km), as well as others.

In Jalilabad, highways of local importance make up 7% than that of this administrative region. Since the territory of Jalilabad is mountainous, certain relevant challenges are being faced in construction of highways. 3,5% of highways are gravel-covered, while 65% are soil roads. The highways of Jalilabad-Astanli-Babali (20 km), Jalilabad-Seyidbazar-Lakin (22 km), Andreyevka-Aligasimli-Delash-Vaykhanli-Shosse-Lakin (45 km), Allar-Uchtepe-Kollar (13 km), Allar-Lakrovka-Novogolovka station (15 km), Goytapa-Gaziabad (8 km), Pokrovka-Novogolovka-Svetla-Rozariya (16 km), Alishabad-Adanli-Shosse (8 km), Takla-Garakazimli-Sarkhanli (10 km), Takla-Mammadrzali (51 km), Parasava-Jangiyan-Zahmatabad (15 km) significantly contribute to the socioeconomic development of Jalilabad region.

Local highways in Masalli region are 211 km in a tote (8,4% of all highways). Most of these highways are gravel-covered. The territory of Masalliare composed of lowland plain, and therefore favorable for construction of both railways and highways. Population number and population density are high in Masalli even on the background of country's population. As most of dwellers are villager here, motor transport is vitally important branch of service sector for this administrative unit of area. Well-organized passenger bus service as well as efficient transportation of passengers is very important matter for Masalli region. Among the highways, Yelgaj-Shosse-Masalli (16 km) Gariblar-Gizilavar (10 km), Sarijuvar-Boradigah (9 km), Masalli-Sharafa-Shosse (10 km), Khırmandalı-Shosse (11 km) are particularly notable as the more important. It is necessary to improve technical quality of local highways with considering higher motion intensity.

In Lerik region, motor transport is the only kind of transport with the exception of flight itinerary Baku-Lerik which sometimes may operate, especially in colder winter season. Motor transport is a composition part of daily life of Lerik region. Over 85% of highways are of local importance in Lerik. Some challenges regarding transportation of passengers between the administrative center and rural settlements as well as neighboring areas still can be experienced in this administrative region in winter months although many highways have been built in the last years. This is connected with the dominance of mountainous relief. More than half of highways are gravel-covered or soil roads, while the share of hardly covered highways is less than 20%.

Lerik-Ambu-Vizazshin (20 km), Lerik-Ambu-Pirasora-Orand-Nuravud (20 km), Shosse-Kalvaz-Pendi-Chokhyurd-Siov-Shosse-Lankaran (30 km), Gosmalyan-Jand-Gamarat (10 km), Pendi-Rivarud-Veri-Shosse-Gamarat (15 km), Lomu-Chayyurd-Rivarud-Rozgov-Mistan (23 km), Rizaoman-Loshu (30 km), Jonu-Kogay (10 km), Shosse-Lankaran (40 km), Aliabad-Shingadulan-Zenoni (20 km), Shosse-Ashaghı Bili-Aliabad-Beykand-Buruq (16 km), Kurdasar-Judlu (10 km) are the highways of intensive transportation of passengers.

70% of human settlements are situated near highways in Lerik region. Such condition makes necessary the improvement of highways both within the region and between other regions.

In Yardimli region, the total length of highways of local importance is about 200 km, or 17% of that of economic region. Some 90% of highways are hard-covered. All highways technically are of five-class. The most important highways inlcudePerimbel-Shilavengiya-Shosse (10 km), Yardimli-Aghlar (15 km), Sirik-Bejan (20 km), Barjan-Telavar-Shosse (12 km), Yardimli-Aghlar (15 km), Sirik-Bejan (20 km), Barjan-Telavar-Shosse (12 km), Ostahir-Yardimli (5 km) by which much more passengers are being transported.

4. Quantitative indicators of transportation of passengers

The natural-destructive processes may negatively influence the transportation of passengers in Lankaran-Astara region. The negative impact happens not only with connection of the hesitation of level of the Caspian Sea but considerably due to the devastation coming from landslips. The last process is typical for Yardimli and especially for Lerik region, where highways and other transport facilities (bridges) may be broken in spite of continuing measures of prevention. The highways of Lankaran-Lerik, Lankaran-Valiton,

Masalli-Yardimli, Hishkadara-Miyanku are regularly being influenced by landslips. Heavy rains also may seriously affect the condition of transport facilities, especially in mountainous areas. All these processes negatively affect the transportation of passengers in the economic region.

In Lankaran-Astara region, transportation of passengers in motor transport is managed by buses, private cars and taxi services. By using these vehicles, people are periodically moving from home to workplace and in opposite direction, or between villages and administrative centers of regions, as well as between local cities and the capital Baku. Transportation of passengers happens also within the territory of large cities like Lankaran and Jalilabad. The chief vehicle of transportation is public bus service in general.

Motion intensity, convenience of schedule of bus service and satisfaction of the existing need in public buses, as well as size, capacity and comfortableness of these vehicles define convenience of transportation of passengers to destinations.

As Table 1 reflects, the growth by the number of passenger buses is being observed in Lankaran-Astara. This is more evident compared to the mid 90es.

Table 1

Thenumber of passengerbusesinLankaran-Astara economic region

Territory	1995	2000	2005	2008	2010	2011	2012
Astara region	73	66	96	100	93	81	80
Jalilabad region	126	181	197	179	184	158	163
Lerik region	26	63	47	51	49	33	30
Lankaran region	321	264	378	366	365	335	336
Masalli region	109	83	228	187	174	139	148
Yardimli region	23	19	30	20	20	27	23
Economic-geographic region of Lankaran-Astara	678	688	976	873	885	773	780

Thistableiscompiledbased on data of ‘Azerbaijan’sregions’, 2013, pp. 313, 323, 333, 343, 352, 362, 372; and ‘Azerbaijan’sregions’, 2013, pp. 262, 271, 280, 289, 298, 308, 317.

In 1995-2012, the passenger buses were increased in number as 15% as much, including 29% in Jalilabad and 36% in Masalli. Capacity of buses has been grown as well, whereas in 90es and in the beginning of 2000s, the used buses were less in size and less comfortable.

The number of passenger buses is different by administrative regions. The number of buses is much more in larger regions. Differences between six regions for the number of buses per 10000 persons are much more. It makes 15 in Lankaran, 8 in Jalilabad, 7 in Masalli and Astara, while only 4 in Yardimli and Lerik.

In recent years, some changes were observed also in the indicators of transportation service (see Table 2).

Table 2

Transportation of passengers by motor transport in Lankaran-Astaraeconomic region (thousand persons)

Territory	1995	2000	2005	2008	2010	2011	2012
Astara region	2852	3486	3832	4517	5322	5812	6312
Jalilabad region	4916	7161	8117	9042	10468	11305	12096
Lerik region	1013	632	867	980	1135	1225	1316
Lankaran region	12534	12946	14756	17703	20994	22904	24920

Masalli region	4241	4884	7532	8015	9770	10483	11280
Yardimli region	901	1004	1311	1526	1757	1889	2025
Economic region of Lankaran-Astara	26457	32513	36415	42183	49446	53618	57949

This table is compiled based on 'Regions of Azerbaijan', 2013, pp. 313, 323, 333, 343, 352, 362, 372; and "Regions of Azerbaijan". 2004, s. 262, 271, 280, 289, 298, 308, 317

Analysis of the table shows that in 1995-2012, transportations with passenger buses have been increased by 2,2 times as much in the region.

In 2005-2012, transportation of passengers has grown by 59% as much in Lankaran-Astara. Growth was at 69% in Lankaran, 65% in Astara, 54% in Yardimli, 52% in Lerik, 50% in Masalli and 49% in Jalilabad.

43% of transportations fall to the share of the administrative region of Lankaran. This is connected with the favorable geographical and transitional position of Lankaran that allows it to play a role of coordinator among other administrative regions, as well as such factors as the much population number, the majority of urban-type settlements, high social and economic significance of Lankaran city in the region. Lankaran city is the main center of transport with higher attractive power and influential role in the region. Jalilabad is the second region by transportation of passengers, and it stays 2 times behind from Lankaran whereas Lerik is on the last position among regions.

Lankaran surpasses other administrative regions by transportation turnover, as reflected on Table 3. It shares 57,5% of transportation turnover of Lankaran-Astara economic region. Astara region is the second (18,0%).

Table 3

Passenger turnover in Lankaran-Astara region, million passengers/km

Territory	1995	2000	2005	2008	2010	2011	2012
Territory	18,6	33,8	54,7	66,9	77,4	83,4	89,4
Astara region	23,5	28,3	26,3	28,0	31,1	32,8	34,8
Jalilabad region	9,7	30,5	30,2	35,4	40,0	42,6	45,2
Lerik region	68,3	160,5	180,7	208,9	244,7	265,3	286,3
Lankaran region	30,4	23,0	26,3	29,1	32,7	34,7	36,9
Masalli region	4,9	3,9	3,4	4,1	4,5	4,7	4,9
Yardimli region	155,4	280,1	321,6	372,4	430,4	463,5	497,5

Thistableiscompiledbased on data of "Regions of Azerbaijan". 2013, pp. 313, 323, 333, 343, 352, 362, 372; and "Regions of Azerbaijan". 2004, pp. 262, 271, 280, 289, 298, 308, 317 əsasında tərtib olunmuşdur.

Analysis of Table 3 shows that in 1995-2012, transportation turnover of passengers have been increased by 3,2 times as much in Lankaran-Astara.

In 2005-2012, transportation turnover has been increased by 55% as much, whereas corresponding rise made up 63% in Astara, 32% in Jalilabad, 50% in Lerik, 58% in Lankaran, 60% in Masalli and 44% in Yardimli.

5. Role of state programs in creation of required facilities

On 11th February of 2004, a decree on confirming of 'State Program on social and economic development of regions of Republic of Azerbaijan' (2004-2008) were signed by the president of the country in

order to increase employment and efficiently use human resources, as well as take advantage of available natural and economic potential, and accelerate the development of non-oil sector of Azerbaijan. The document was of great importance for the country also in terms of the expediting of realization of intended reforms, the improvement of social infrastructure, as well as the reduction of poverty. The implementation of it enabled the country speed up pace of its economic growth and enhance condition of investment activity. Tens of enterprises on various branches of Azerbaijan were commissioned during these five years. The state program facilitated the development of social infrastructure and living condition of the population in all regions of the country. The targeted issues were directly or indirectly connected with the development of social infrastructure as reflected in many items of the program. The item #3.6 was called 'Lankaran economic region'.

Following the completion of measures related to this state document, the implementation of second analogic program was launched in accordance with the corresponding decree of the head of country dated to 14 April, 2009, which encompassed 2009-2013 years. The second 'State Program on social and economic development of regions of Republic of Azerbaijan' aimed at boosting of industry, agriculture and entrepreneurship activities, and also improvement of level of living and eradication of poverty. Item 4.3 of this document relates to Lankaran-Astara economic region.

According to the third state program (2009-2013 years) on socioeconomic development of the regions, measures on the development and improvement of different branches of social infrastructure are planned to be implemented, mostly concerning highway infrastructure, housing and communal services, electricity-, heat- and gas supply, education, culture, health care, public security, ecology, social protection, communication, tourism and other activities. All these works have to be done in the economic and geographical region of Lankaran-Astara.

In 2004-2008, 18,6 km-part of the Alat-Astara-Iranian border highway were constructed in the territory of Astara administrative region. Condition of transport facilities were enhanced in Astara as well. By the shown years, complete reconstruction works were implemented in 36 km-long parts of 26 km-long highways of the country (republic) importance and 175 km-long highways of local importance. In the same period, the bridge on Astarachay River was reconstructed. Meanwhile, the highways of Lovayin-Palikesh (at the 1 km-long part), Kijaba-Bazruband (1 km), Pensar-Kolokos (1,3 km), Pensar-Toladi (at the bridge on Pensarchay River), Sanjaradi-Varnash (3,3 km), Tazakand-Hajimarda (2 km), Astara-Gamishovka (3 km), Astara-Alasha (1,8 km), M-3-Suparibagh (1,2 km), Shiyaku-Shamatuk (1,5 km), Sarak-Shuvi (1 km) were reconstructed. The Shiyaku-Samatuk highway and the 24 running meter (r/m)-long bridge on Pensarchay River were commissioned. The 26 r-m long bridge on the highway of Aghkorpu-Ovala-Shumrud was constructed as well.

The implanted works were continued in 2010-2013 with the construction of bridge fords at the 4^{th} km of Sarak-Shuvi highway, the 13^{th} km and 17^{th} km of Lavayin-Palikesh highway (on Shumruk river), the 3^{rd} km of Pensar-Toradi highway (on Komanli river). In the same period, the collapsed parts of streets of were reconstructed while the new terminal on highway was asphalted (4900 sq. km) in the territory of city of Astara.

The analogical works were implemented in Jalilabad administrative region as well. Thus, in 2004-2008, construction and reconstruction works were implemented at the Jalilabad part of the highway of Alat-Astara-Iranian border. Highways with total length of 124 km were reconstructed or constructed, including the following highways: M-3 (129^{th} km)-Gunashli, Y-15-03 (6 km, Aligasimli)-Uchtepe-Jafarkhanli (4 km), M-3 (Goytepe)-Komanli-Alashar (2 km), M-3 (134^{th} km)-Garakazimli-Boykhanli (28 km), Jalilabad-Zahmatoba-Gendara (6 km), Jalilabad-Tekle-Mashadilar (14,4 km), Jalilabad-Seyidbazar (2 km) and Privolnoye-Vanlik (8 km). A new 12 r-m-long bridge was constructed on Misharriver at the 1^{st} km of Jalailabad-Seyidbazar highway. Jalilabad-Yardimli highway, connecting the two centers of administrative regions is expected to be commissioned in upcoming years.

In 2010-2013, the construction of Jalilabad-Sadatli highway was completed while 24 km-long part of Jalilabad-Lakin-Yardimli highway was asphalted, and 28 km-long part of the same highway was covered with

gravel. The state of the 34th km part of highway of Ojagli-Garakazimli-Melikgasimli connecting 21 settlements in Jalilabad region was enhanced. Other highways in this administrative region were reconstructed with gravel (14 km in total) as well. The lengths of reconstructed asphalted and gravel-covered highways make up 15 km and 19 km respectively in Jalilabad. Within the indicated period, a new 16 r-m-long bridge on Komanliriver was built at the 1st km part of Komanli-Haziabad highway. The completion of these works facilitated the improvement of transportation of passengers in Jalilabad.

In the administrative region of Lerik, highways of common use and local importance of 67 km length in total were reconstructed from 2004 to 2008. The reconstructed highways in this mountainous area include the followings: Lankaran-Lerik (40 km-long part), R-48 (37th km)-Vizazamin-Almu (1 km), R-48 (50th km)-Shingadulan-Buludul (1 km), Lerik-Kalvaz (14 km), Y-43-19 (12th km)-Hazovi (0,5 km), Y-43-19 (23rd km)-Hileydara (0,5 km), Y-43-21 (4th km)-Andurma-Chayrud (0,5 km), Orant-Yaylag (2 km), Lerik-Hiramo (0,5 km), R-48 (40th km)-Bikandul (1 km), R-48 (40th km)-Babagil (1 km), Y-43-13 (15th km)-Saman (0,5 km), Y-43-13 (18th km)-Shingadulan-Aghchay-Ordahal (2 km), Y-43-15 (9th km)-Boykandil-Burug (0,5 km) and Aliabad-Gurdasar (2 km). In 2010-2013, substantial reconstruction and asphalting were implemented by a series of highways connecting villages in Lerik. The length of asphalted and graveled highways made up 0,5 km and 21 km respectively. Meanwhile, a new 16 r-m-long bridge ford was built on 4th km of the Lerik-Murya highway. Streets of N.Narimanov, H.Aslanov, Ardabil, Sabir, J.Shahiyev, Haji Heydar and others were asphalted in the center of administrative region of Lerik (14841 sq.km).

In 2004-2008, highways of 53 km in tote were reconstructed in the administrative region of Lankaran. 20 km-long part of Alat-Astara-Iranian border were constructed in this region. Highways of Lankaran-Lerik (12 km-long part), Girdani-Havzava (6 km), Lankaran-Zovla (6,5 km), Vilsan-Osakucha-Tirkanjil (5 km), Vel-Gamishovka (0,5 km), Y-42-16 (11th km)-Jil (2 km), Balashuruk-Kosalar (1 km) were reconstructed as well. In general, highways of 33 km in length were asphalted in Lankaran region.

In 2010-2013, full reconstruction and asphalting works were conducted by highways stretched between rural settlements (6 km were asphalted and 4,5 km were covered with gravel). In the meantime, the bridge fords were built at the 8th,9th and 11th km parts of highway of Vilvan-Osakucha-Gunahir (on Veravul river), as well as the 11th km part of those highway near Valiton village. Meanwhile, the total length of highways, asphalted in Lankaran city in 2010-2013 made up 33 km.

In Masalli region, highways of 138 km-long in tote were reconstructed in accordance with the state program of 2004-2008 years. Reconstruction works concerned 18,5 km-long part of Alat-Astara-Iranian border, stretching in the territory of Masalli. The reconstructed highways were the followings: Masalli-Yardımli (the 17,7 km-long part), M-3 (150th km)-Railway station, Masalli-TazaAlvadi (0,5 km), Seybatin-Alishanli (1,5 km), Hasanli-Khirmandali (3,3 km), Alvadi-Musakucha (0,2 km), Musakucha-Luran-Arkivan (3 km), Kurdabazar-Garghalig-Gadirli (7 km), Masalli-KohnaAlvadi (2,3 km), Boradigah-Rudakanar (8 km), M-3-Luran (3 km), M-3 (170th km)-Gayachol (6 km), Y-44-10 (7th km)-Ninalov (4 km), Tatyan-Yelaghaj (11,5 km), Balakolatan-Godman (2 km), Boradigah-Tukla-Məmmədoba (9,5 km), Qarghalig-Eminli (4 km), Bambazi-Khalifalar (2,5 km), Hishkadara-Miyanku-Kubin (7 km), Y-44-02 (2nd km)-Banbashi-Khalifalar (2,5 km), M-3 (165th km)-II Samidhkan-Alishanli (1 km), M-3 (173 km)-Gizilaghaj (7,5 km), Y-44-10 (16th km)-Mollan (3 km), M-3 (173rd km)-Seyidlar-Sirabi (2 km), Y-44-10 (9th km)-Babasar (0,5 km).

In 2010-2013, 1,3 km-long highways were completely asphalted or reconstructed, while 19,7 km-long highways were covered with black in Masalli region. Moreover, a 12 r-m-long bridge at 4th km of the Tatyan-Yelaghaj highway as well as another 19 r-m-long bridge at 4th km of the Tukla-Mammadoba highway were built. Highways were asphalted in Fizuli street (12000 sq.m), Garabagh street (14400 sq.m), Z.Aliyeva street (13340 sq.m) and Azerbaijan street (14800 sq.m) of Masalli city.

Highways were reconstructed in Yardimli region, too. Thus, in 2004-2008, the total length of reconstructed highways made up 72 km. These works were implemented on highways of Masalli-Yardimli (38 km), Yardimli-Deman (13 km), R-47 (37th km)-Horoni-Yolojag (3 km), R-47 (49th km)-Valikhanli-Alchabulag (5 km), Y-65-16 (1st km)-Ostayir (1 km), Y-65-16 (2nd km)-Garagaya-Yaylag (3 km), Osnarghan-

Shikhhuseynli (7 km). In 2009-2013, highways of 1,2 km-long and 26 km-long were asphalted and covered with gravel respectively. In the administrative center of Yardimli region, such works have not been implemented yet.

6. Conclusion

The carried out researches and analyses show that there are evident differences within the territory of Lankaran-Astara economic region in terms of transportation and also level of territorial organization of passengers. This is connected with the natural and geographical condition and geographical factors, difference for extent of mastering of an area, and also level of development of infrastructure. Improvement of service of transportation in accordance with contemporary requirements should be considered as key factors of efficient use of both natural and human resources.

The implementation of state programs on social and economic regions led to creation of improved facility in the regions of Azerbaijan as well as Lankaran-Astara.

Transportation of passengers requires expeditious operation of bus service and timely delivery of working population to workplaces. This issue becomes more topical during winter season, especially in Yardimli and Lerik region.

In order to provide secure transportation of passengers through the territory of Lankaran-Astara, the creation of developed transportation system is needed in the region. The pre-Caspian territories, including Lankaran lowland Lerik, Lankaran and Yardimli are the places with higher risk of transportation service due to occurrence and repeat of natural destructive processes. On the other hand, the construction of new highways must not violate environmental balance in the region.

Determination of new routes of passengers requires the consideration of location of secondary schools in the territory of Lankaran-Astara. Bus service must be more easily accessible for pupils not depending on seasons of year. Buses should operate at much number as it is possible between centers of administrative regions and far villages for avoiding delays and other undesirable situations.

Transportation of passengers via the Baku-Lankaran-Baku railway line must be advanced, while trains must operate expeditiously and their schedule of arrival/departure must be convenient for passengers.

The creation of strong transport network should be regarded as a key factor in the development of Lankaran-Astara's resort facilities and tourism in general. In recent years, relevant advancements have been reached but transportation must be improved further with taking into account modern standards. Meanwhile, further reconstruction of Lankaran airport in accordance with contemporary requirements must facilitate transportation of passengers from and to the region.

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Synthesis and characterization of biodegradable polymeric composites using locally available starch derivatives

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ABSTRACT
The current research is focused on preparing biodegradable composites of polystyrene using locally available starch derivatives. A series of polymer composites of polystyrene and manioc (Cassava) starch with varying amounts of starch were thus prepared.
Structure determinations were done using FTIR. The effects of starch on mechanical, thermal and water absorption properties and biodegradability of composites were investigated. Tensile tests showed that the tensile modulus was decreased with increase in the amount of starch in the composite. However, the tensile strength and the elongation at break were increased with the amount of starch. The results from TGA and DTA showed improved thermal stability of PS/starch composites compared to that of pure PS. Water absorption was increased with increasing amounts of starch due to hydrophilic nature of starch incorporated and the biodegradability of polymer/starch composites evaluated by measuring absorbance of sugars released in the biodegradation process, was increased with increasing amounts of starch in the composites.

Key words: Biodegradable polymers, Biodegradability, Polystyrene, Polystyrene/starch composites, FTIR, TGA

1.0. INTRODUCTION

Plastics are used in an enormous and expanding range of products, from paper clips to spaceships due to their relatively low cost, ease of manufacture, and versatility. The light weight combined with desired properties for specific applications have made plastics to be manufactured for various applications replacing traditional materials, such as wood, stone, metal, glass, and ceramic. One of the major uses of plastics is packaging. In developed countries, about one third of plastic is used in packaging.

Unfortunately, most of the plastics are not inherently biodegradable and hence the use of plastics has become a major environmental issue. Accumulation of polymer debris on the earth's surface may cause various diseases including dengue, malaria, etc. On the other hand, wasted plastic grocery bags, garbage bags, thin sheets, etc. block the drainage systems in cities causing floods in rainy days. In addition, both fauna and flora have become highly endangered by plastic waste in numerous ways. There are reports about large numbers of floating plastic debris in the ocean and their ingestion by fish with consequent intestinal blockage. Now it is a well-known fact that not only marine organisms, birds, mammals and a wide variety of terrestrial animals are also threaten by plastics.

Hence, the fabrication of environmentally-friendly polymeric systems has been a major research interest during the last two decades. In nature, there is abundance of biopolymers such as starch, cellulose, wool, and silk, etc. Preparation of composites with such biopolymers have received considerable attention because of their improved physiochemical properties with industrial and commercial value and improved compatibility with the environment (Grassie, 1982).

Starch has been considered as the most outstanding natural polymer that can be used together with a synthetic polymer in the preparation of biodegradable polymeric materials because of its' low cost, availability and biodegradability [Shanker & Thachil, 2009]. Typical applications of these biodegradable polymeric materials include food utensils, disposable pens, packaging and composting bags [Błaszczak et al, 2005].

The emphasis of the current research is to resolve, at least partially, the environmental issue involved with wasted plastic by developing a degradable plastic in an economical way by using locally available manioc (Cassava) starch.

Roots of Manioc, with common names Cassava, Manihot esculenta, Brazilian arrowroot, and Tapioca, is essentially a carbohydrate source. Its composition shows (60–65) % moisture, (20–31) % carbohydrate, (1–2) % crude protein and a comparatively low content of vitamins and minerals. Cassava starch contains 70 % of amylopectin (Fig. 1) and 20 % of amylose (Fig. 2). [*https://en.wikipedia.org/wiki/Cassava*

resistance towards biodegradation [Li, 2005]. Preparing a composite of polystyrene with Manioc starch, enhancement of flexibility as well as biodegradability of the resulting composite is expected while retaining all the other desired properties of polystyrene to be used as a packaging material. In the current research emulsion polymerization was used to synthesize polystyrene because it is easy to control the temperature of the reaction and remove any unreacted monomer from the system.

2.0. METHOD

2.1. Preparation of Pure Polystyrene (PS)

Styrene (20 g) was dispersed in deionized water (66 ml), in a clean conical flask. Sodium dodecyl sulphate (0.5500 g), di-sodium hydrogen phosphate (0.1320 g) and potassium persulphate (0.1320 g) were added in to the mixture. It was stirred well until all the ingredients are dissolved. The conical flask was bubbled with N_2 gas to remove air and it was tightly capped with a lid and covered with aluminum foils. Conical flask was kept in the shaker bath at 70 ˚C and shook at a frequency of 5 Hz for about 2 ½ h. After the reaction was completed, it was removed from the shaker bath and kept, until it was cooled down to room temperature. Then 2.5 (%w/w) solution of aluminum sulphate (11.0 ml) was added to the conical flask slowly and the system was kept undisturbed until the coagulated polymer was formed. The coagulated product was purified by washing twice with methanol and twice with distilled water using a Büchner funnel and dried at 60 ˚C in an oven for about 4 h. Then a known weight of the polymer was dissolved in a known amount of toluene and the solution was poured in to a Petri dish. It was kept outside until all the toluene gets evaporated and a polymer film was obtained.

2.2. Preparation of PS/Starch composites

Polystyrene/starch composites were prepared by using the same procedure mentioned above, however, adding varying percentages of starch to produce 5%, 10%, 12%, 15% (w/w) of starch in the composites. Three series of samples were prepared by varying particle sizes of starch in three different size ranges, 63-75 µm, 75-90 µm, 90-106 µm.

2.3. Characterization tests

2.3.1. FTIR analysis

Infrared analysis was performed using the AVATAR 320 FTIR instrument. Infra red spectrum of the monomer styrene was taken by using transmission liquid cell technique and all the other polymer films were analyzed using transmission thin film technique.

2.3.2. Mechanical Properties

Mechanical properties in uniaxial tension of the composite samples were evaluated from the stress-strain curves obtained using a universal testing machine of model H10KT. Measurements were taken with samples having dimensions of 1 cm × 4 cm and about 65 µm in thickness. For each experiment, the crosshead speed of the machine was adjusted to 1 mm/min. Four measurements were taken for each sample and the average of the measurements of closer proximity was taken into consideration.

2.3.3. Thermogravimetric Analysis (TGA) and Differential Thermal Analysis (DTA)

TGA and DTA were carried out using Thermal analysis station, Rigaku Tas-100, using ASTM D 2117 – thermal analysis method. The TGA and DTA scans were recorded at a heating rate of 10 ˚C /min under a flow of N_2 in a temperature range of 0–500 ˚C.

2.3.4. Water Absorption

Dried sample films of approximate dimensions 3 cm × 4 cm with thickness about 450 μm were used to measure the water absorptivity of the composites. First, the samples were weighed and then soaked in distilled water. Then, each sample was taken out from water at regular time intervals and the weights were recorded. The weighing measurements were carried out until a constant value was reached. Values of the water absorption of the samples were reported as a percentage increase of their initial weight.

2.3.5. Biodegradability

Dried sample strips of dimensions about 2 cm× 2 cm with thickness approximately 250 μm were immersed in a soil solution at room temperature. At various time durations from 2 days to 42 days, soil solution (1.00mL) was removed from each flask into test tubes and Nelson's assay was done as follows. Nelson's reagent (1.00 mL) was added into each test tube and they were heated in a boiling water bath for 20 minutes. Then the tubes were allowed to cool down to the room temperature and arsenomolybdate reagent (1.00 mL) was added. The contents in each test tube were mixed well on a vortex mixture and allowed to stand for 5 minutes. Distilled water (7.00 mL) was then added into each test tube and shaken well. Finally, the absorbance of each soil sample was obtained at 540 nm with distilled water as the blank. The bio degradability of samples was evaluated by measuring their absorbance.

3.0. RESULTS AND DISCUSSION

Infrared analysis was used to confirm the structures in each step of PS-starch composite preparation. Comparison of spectra for styrene (Fig. 3) and pure Polystyrene (Fig. 4) indicated that the peak due to alkene group C=C stretch (m) in the range of 1640-1670 cm^{-1} for styrene has been disappeared in the spectrum for pure Polystyrene confirming the complete polymerization (Miller, 1987).

Tables 1.0 and 2.0 show the assignment of peaks for styrene and polystyrene, respectively.

Although FTIR spectra were obtained for all the samples made, only few spectra with varying percentages of starch as well as varying particle sizes are shown here (Fig. 5-Fig. 7). Comparison of spectra of PS/starch composites with the spectrum of pure polystyrene showed that the characteristic peaks for polystyrene occur at almost same frequencies in all the composites. In addition to these peaks, it can be clearly identified that the peak due to –O-H groups of 2, 3, and 6 position of starch, is present in the range of 3200-3600 cm^{-1} (Table 3.0). These observations clearly confirm that in the polymerization procedure to prepare composites, structures of polystyrene and starch remain unchanged. It also suggests that there are no chemical bonds formed between the PS matrix and starch. Instead the starch filler is only physically bonded with PS.

Mechanical properties of composites were investigated through uniaxial tension of the composite samples and the analysis of resulted stress-strain curves. Fig. 8 shows the stress-strain curves for polystyrene-starch composites with varying amounts of starch with particle sizes in the range 63-75 □m. The tensile modulus, determined by the gradient of the initial part of the stress-strain curve, has been decreased when starch is incorporated. The modulus represents the tendency of an object to deform along an axis when opposing forces are applied along the same axis and is a measure of stiffness of the materials. The rigidity or the stiffness of polystyrene is reduced upon introducing starch as expected. The modulus is decreased with increase in the amount of starch in the composite. However, the tensile strength and the elongation at break are increased with the amount of starch. This could be due to the increased flexibility reducing brittleness in pure polystyrene when starch is introduced.

The results from Thermo Gravimetric Analysis (TGA) and Differential Thermal Analysis (DTA) showed improved thermal stability of PS/starch composites compared to that of pure PS (Table 4.0). The PS/starch composite having 15% starch with the particle sizes in the range 63 – 75 μm showed the highest thermal stability among other composites.

Percentage increase of the initial weight of the composite samples when they are immersed in water is considered as a measure of their water absorptivity. Percent water absorption is increased with increasing the amount of starch in the composites. The sample studied with highest amount of starch (15 wt%) showed the maximum water absorption. This is due to the increase in hydrophilic nature of starch when the amount of starch in the composite is increased. It can be seen that all the samples achieve maximum degree of water absorption within a time period of 40 to 80 h.

To study biodegradability, the soil burial method was used. Absorption of light by reducing sugars which are released from the oligomeric units of starch in the composite during biodegradation was recorded. In particular, the absorption of light at wave length 540 nm in Nelson's assay was assumed to be linearly proportional to the amount of filled polymer degraded. Fig.9.0. shows the variation of biodegradability of composites having varying amounts of starch with time. According to the results, the biodegradability is increased when the amount of starch in the composite is increased.

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DEVELOPING AN INSTRUCTIONAL MODEL TO SUPPORT TEACHING OF INVESTIGATIVE PRACTICAL WORK IN SECONDARY SCHOOL CHEMISTRY

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Abstract
Many teachers in developing countries including Kenyan schools use practical work in chemistry as perhaps the closest method to teaching by inquiry. Performance in chemistry at the end of course in Kenya has, however, been consistently low, implying the ineffectiveness of the convectional practical work. This realization led to an interest in the study, which aimed at determining the practices that could develop scientific thinking in learners. A Design Based Research (DBR) approach was used to develop a design process for incorporating instructional features intended to promote use of investigative practical work in secondary school chemistry. Model materials that support teaching of investigative practical work were developed in a cyclic approach of design that includes formative evaluation. They were used in chemistry classrooms and they proved to be effective in supporting teachers' use of investigative activities. This process led to the development of Secondary Chemistry Investigative Practical Work (SCIPW) model aimed at providing guiding principles and processes in the organization and development of such instructional materials.

Key Words
Instructional materials, chemistry teaching, investigative practical work model, Instructional Design;

1. Introduction

Inquiry-based teaching has been proposed and encouraged by a number of science educators as a significant tool in the development of students' scientific kills, knowledge and cognitive acceleration. While chemistry subject is taught using theory and practical approaches, this research focuses on the practical work. Practical work in science in its prime functions is defined as 'hands-on' activities that support the development of practical kills, and help to shape students' understanding of scientific concepts and phenomena (SCORE, 2009). Most chemistry teachers believe that practical work is important and leads to meaningful learning of Chemistry. Some science educators have, however, raised questions about the effectiveness of convectional practical work as a teaching and learning strategy (Abrahams & Millar, 2008). They argue that practical work should involve learner-centered learning environment which engage students in knowledge construction, as opposed to teacher-centered environment which involves information absorption. Current Science Education reforms are geared towards investigative approaches of science learning which involves practical work (SCORE, 2007; Trowbridge et al, 2004).

Though many teachers spend a lot of time in practical work, the process may not necessarily be investigative in nature. In the convectional practical work, the learners follow laid down procedures to arrive at a predetermined outcome and do not use scientific ideas to guide their actions during the practical activity and hence to reflect upon the data they collected (Motswiri 2004). Many of the instructional materials used in schools, do not also support the teachers in the use of investigative practical activities.

2. Research problem

There has been consistently low performance in chemistry subject in Kenya and possibly other developing countries over the years. Studies which have been carried out to establish the causes of the low performance seem to point at the low contribution and quality of practical work (Orado, 2009; Nyang'ai, 2010; Achimugu, 2009; Kamau, 2004; Inzahuli, 2007; Bekele & Melesse 2010; Sunzuma et al, 2012). Evaluation reports have constantly advised teachers to expose learners to more practical work that involves investigations (KNEC, 2008; KNEC, 2011; KNEC, 2012). It is also imperative that the low performance in the practical work examination does affect the overall performance in chemistry.

While many teachers spend a lot of time in practical work, the process might not be investigative enough to impact on the overall learning of chemistry. Traditional laboratory experiments where procedures are provided to guide learners in a step by step manner, do not seem to provide enough opportunities for students to use their minds to solve problems posed in the laboratory (Chiapetta & Koballa, 2010; Trowbridge et al, 2004). Hubber & Moore (2001) argue that 'hands on' activities in science practical work do not necessarily guarantee scientific investigation. When learners follow laid down procedures to arrive at a predetermined outcome, they do not use scientific ideas to guide their actions during the practical activity and to reflect upon the data they collected (Motswiri 2004). Trowbridge et al (2004), who advocated for action oriented process argue that, learners should instead be guided to identify problems and potential solutions, design their own procedures, analyse and discuss assumptions, procedures, predictions, products and solutions and link their experiences to activities, concepts and principles.

Most instructional materials used in schools do not fully support the teachers in the use of investigative practical activities. In 1981 the National Science Teachers Association (NSTA)- United States sought for exemplary programs in secondary school science teaching that focused on inquiry and investigative methods of teaching (recorded in Trowbridge et al, 2004). It was found that textbooks and commercially published supplementary activity guides are non-inquiry approaches to science teaching. Other studies have also indicated curriculum materials as failing to support investigative practical work (Krajick et al, 2003; Kesidou & Roseman, 2002, Krajcik et al, 2007). The teachers can be guided to use the existing instructional materials to develop instructional strategies that support the implementation of learner-centred investigative practical work in secondary school chemistry learning.

Trowbridge et al (2004), notes that the challenges to investigative teaching are still evident and the shift from traditional expository methods has been very slow. In support, Krajcik et al (2003) claim that the approaches of pedagogical reforms to bring inquiry into classrooms present core challenges for the field of science education. They, therefore, pointed out that research-based curriculum materials can address these challenges and provide improved tools for learning for teachers and students through development of appropriate instructional designs. Efforts to reform science education, therefore, call for specifically designed instructional materials for the improvement of chemistry and science teaching and learning. The main objective of this study was to develop an instructional model for constructing instructional materials that support teachers in the use of investigative practical work in secondary school chemistry.

3. Research Methodology

The study employed a Design-Based Research (DBR) design. Design based research is a systematic but flexible methodology aimed at improving educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories (Wang & Hannafin, 2005; DBRC, 2003). DBR design was appropriate because it helped to create and extend knowledge about developing, enacting, and sustaining innovative learning environments (DBRC, 2003). The five basic phases of an Instructional Design Model (IDM) made up the five stages this study. These were: (1)Assessment of the practices and needs of Chemistry practical work in schools (2) Design and development of Chemistry practical work instructional materials prototype (3) Try out of the prototypes (4) Evaluation of the instructional strategies (5)Refinement of the materials. The research process involving the five stages is summarised in figure 1.

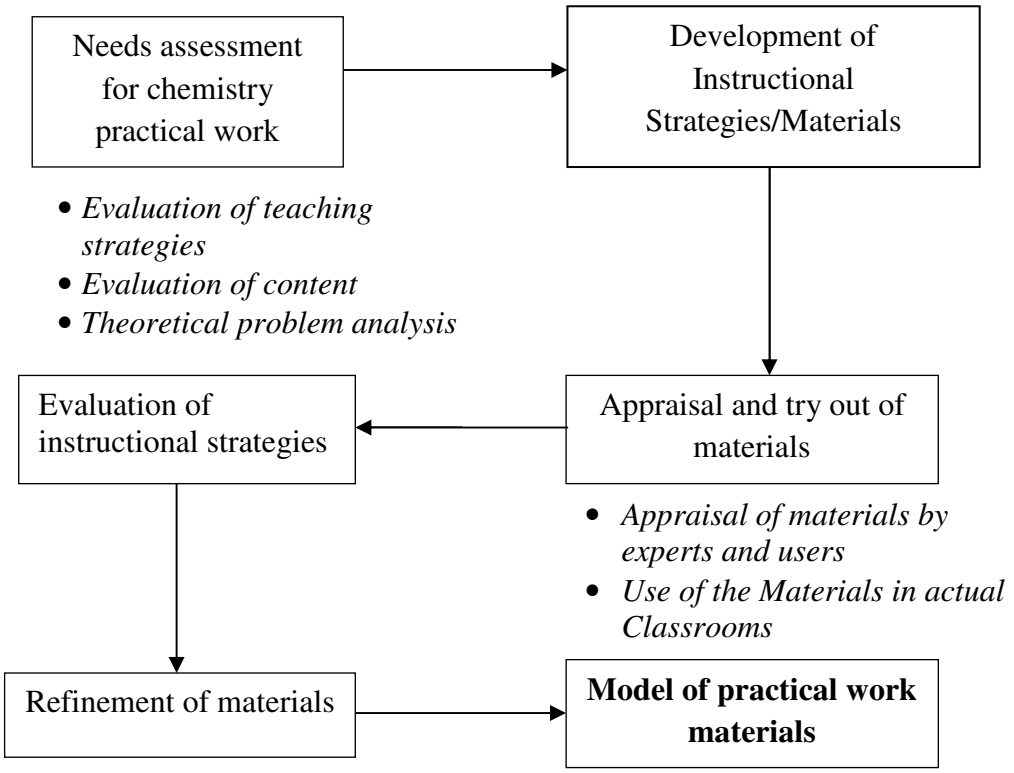

Figure 1: The five stages in the research process

Needs analysis for Chemistry practical work is the theoretical problem analysis which involved literature review on characteristics of appropriate materials for learner-centred investigative activities. It also involved context analysis of current practice and needs for learner-centred Chemistry practical work. This stage involved empirical analysis of: (a) the teaching needs of chemistry practical work (b) Instructional materials available for chemistry practical work (material needs analysis) (c) Worksheets and textbooks to identify skills emphasized by practical work in the curriculum materials as well as presentation of practical activities in the materials (content needs analysis).

The study at this stage was carried out using questionnaires for teachers, teacher interviews, document analysis schedule and lesson observation of chemistry practical lessons. Document analysis schedule was used for analysis of the textbooks commonly used by teachers for Chemistry practical work. Using data gathered in stage one, design specifications were formulated. These are design standards against which the final materials were evaluated. Some design specifications found in Ottevanger (2001), CDC-HKEAA (2007), Ottevanger (2013) and Motswiri (2004) were adapted to suit the requirements of this study.

Instructional materials were then designed and developed based on the design specifications with complete guidelines on how to introduce, perform and conclude the lesson. These materials consisted of both teacher support materials and learner's work sheet. To make them more relevant, the activities were based on the objectives of the local secondary school chemistry syllabus the process also adapted a lot from available materials by changing the practical activities into investigative practical work problems to encourage learner-centred classroom practice through presenting scenarios and asking students to develop experimental plans to

solve the problems. From the content in the topic *acids, bases and indicators,* six lessons were constructed for the practical work.

Experts in the science discipline conducted content reviews on the practical work materials developed (first level prototype) to ensure scientific accuracy. Forty seven teachers Chemistry trained teachers were involved in the study to evaluate materials with the view of determining the appropriate methods of teaching chemistry and provide feedback on important characteristics for investigative practical work. Other three teachers who had a long experience in the teaching of chemistry were given a specific role to appraise the materials. At the same period two science education experts from a university were also requested to appraise the materials and the study instruments mainly as a verification measure. The feedback was used to redesign and improve the materials to develop the second level prototype that was used by teachers.

The chemistry practical work learning materials developed in stage two were used by three teachers and their students in a laboratory and provided feedback and assessment on different aspects of their practicality and effectiveness. Feedback from these trials was used to review and redesigned the instructional materials producing a third level of materials (third prototype). The third prototype was used in the laboratory by five teachers. This stage involved formative evaluation of the practicality and effectiveness of the instructional strategies in the materials in Chemistry laboratory settings. The last stage of the development of the exemplary instructional materials design involved refining the materials based on the feedback from the outcomes to produce the best model of instructional materials that can be used in learner-centred investigative practical chemistry.

4. Data Analysis and Results

The Development of Secondary Chemistry Investigative Practical Work (SCIPW) Model

The results of each stage of the study were used in the construction of a linked procedure in the form of a model for the development of instructional materials for teaching secondary school chemistry practical work through investigations. I label this model as ***Secondary Chemistry Investigative Practical Work (SCIPW)*** model. The SCIPW provides a guide through the process of developing instructional strategies that support teachers in the implementation of learner centred investigative practical work in Secondary School Chemistry. Secondary Chemistry Investigative Practical Work (SCIPW) model was basically constructed through some key stages identified by the study. The first stage is the 'mainstream' which is regarded as the *backbone* of the overall model.

4.1. Stage one of SCIPW model: The Mainstream

The first stage involves a close analysis of the content of chemistry practical work currently used in secondary schools. In most cases this would be contained in the national syllabus. This guides in the design of instructional strategies and activities for investigative practical work. The designed activities went through various, appraisals, trials, evaluation and refining as well as redesigning through an iterative process to produce a final prototype of practical chemistry materials (Dick & Carey 2005). This was guided by the mainstream model (figure 2)

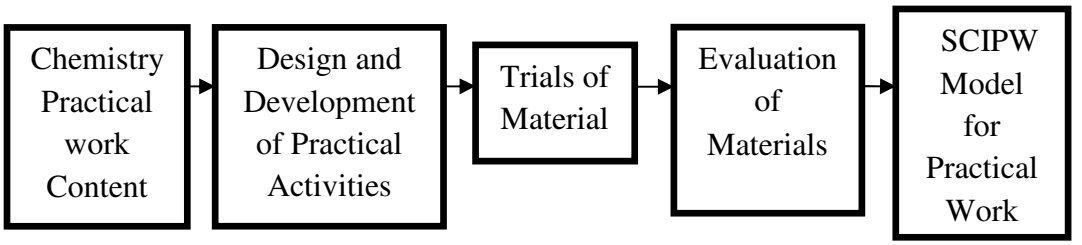

Figure 2: The Mainstream of SCIPW model

4.2. Stage two of SCIPW Model: Identifying Chemistry Practical Work Content

The content of the instructional materials should reflect facilitation of activities that would stimulate the learners' cognitive mode and in a way allow them to construct their minds and activities. The content of instructional materials (mainly textbooks) that teachers were using in schools to guide learners through chemistry practical work were analysed with an aim of finding out the nature of content as well as support for investigative practical work available in the materials. The syllabus usually provides a guide on appropriate content for the level of learners. The content recommended by the syllabus which was also reflected in the text books was analysed using document analysis schedule. The utilization of such materials was also sought through lesson observations of teacher practices as informed by the instructional materials they used. Essentials for teaching practical work through investigative methods were also identified through teacher questionnaires in which the teachers provided their views of what they considered as the best and improved way of carrying out practical activities. Figure 3 shows processes of the second stage of SCIPW model.

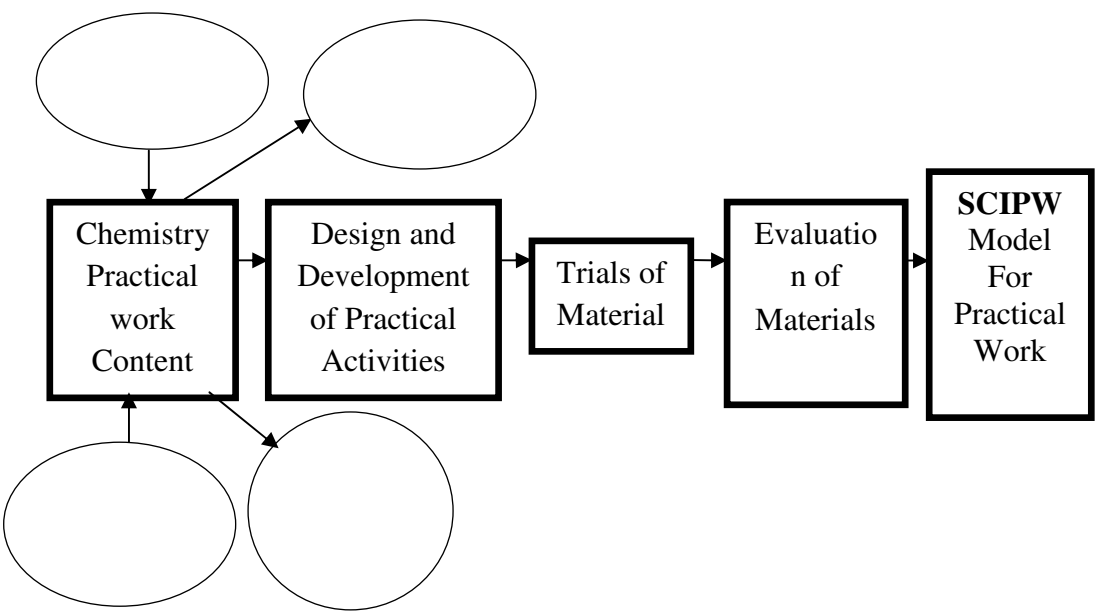

Figure 3: Stage 2 of SCIPW model: Identifying chemistry practical work content

Five different textbooks commonly used by teachers and approved by the national curriculum centre which is Kenya Institute of Curriculum Development (KICD) for the teaching of Form One chemistry topic of acids, bases and indicators were analysed. The text books were found to contain practical work content presented largely in a cookbook style where most of the procedures were provided and the expected outcome outlined. Such designs in instructional materials are likely not to support learners thinking skills (Kidman, 2012; Krajcik et al, 2003). Instead, such materials tend to encourage learners to simply perform instructions in a mechanical form. Similar observations were made by Abrahams & Millar (2008) who argued that practical work was generally effective in getting students to do what is intended with physical objects, but much less effective in getting them to use the intended scientific ideas to guide their actions and reflect upon the data they collect.

Each of the six lesson areas in the books were analysed to determine the support they provide for investigative practical work. Interestingly textbooks were found to contain little support for investigative activities. The only support found in most textbooks was provision of objectives observed in 73.3% of the materials. Other support features for investigative practical work were found in low percentages such as; providing relevant phenomena (23.3%), reference to prior knowledge (30%) and provision of background information related to the practical activity (30%). Opportunities such as guiding on learner participation in formulation of procedures to use in the activity, guide on pooling of results together and probable learner questions were lacking. Similar weaknesses concerning instructional materials have been noted by other researchers (Thijs, 1999; Stoffelsma, & Kwetu, 2004; Ottevanger, 2001; Motswiri, 2004; Krajcik et al, 2003). Such weaknesses in instructional materials could hinder the use of constructivism that supports 'cognitive acceleration' in the learning set up. Lesson observations showed that teachers were not conducting lessons using learner-centred strategies. The teachers provided step by step guide on the activities they carried out which the learners followed without question or reflection. In most cases the results were not consolidated and learners were not given opportunities for scientific reasoning and arguments. Most teachers were found to follow the practical work as outlined in the textbook without alterations.

This practice indicates the importance of constructing instructional materials based on the current teacher practice with a change in the approach to instruction. This nature of 'recipe-based' practical work is not sufficient to develop students scientific thinking referred to by Kim & Chin (2011) as 'habits of mind'. It was observed that learners were restricted to the use of procedures given and did not even question them. During class activities involving practical work, learners were keen on following procedures and could be heard asking each other to read out the next 'step' in the procedure provided. When finished with the activity, they would sit and wait for the teacher to tell them what they should do next. They were found to be reluctant to discuss their findings among themselves, thus giving a docile mood for what is otherwise expected to be a vibrant session.

This analysis of content and teacher practice provided the researcher with an important base of identifying content needs in the learning of investigative practical work. The content of the books gave a useful lead to develop activities that were modified towards investigative activities.

4.3. Stage three of SCIPW model: Design and Development of Instructional Activities

Design and development of practical activities in the instructional materials started with the development of design specifications. Design specifications for the instructional materials were informed by theoretical orientation (what literature presents as best practice for learner-centred investigative practical work) and feedback from empirical analysis (textbook content, teachers' views and actual teacher practice in the

classroom). Theoretical orientation provided the designer with what is considered as best practice in constructivist learning environment (Smith & Ragan, 1999; Brooks & Brooks 1993; Hidir & Gultekin, 2007; Kirschner et al, 2006; Jonassen, 1999) and design specifications for developing materials used in similar studies (Ottevanger, 2001; Thijs, 1999; Motswiri, 2004; Davis & Krajcik, 2005; CDC-HKEAA, 2007; Ottevanger, 2013; Davis et al, 2014). Designing the instructional materials also involved a consideration of the challenges identified in the books used by teachers to support teaching of practical work (obtained from document analysis schedule and teachers' views in teacher questionnaires) as well as observed classroom practices during practical work lessons. Availability of resources in the local set-up was considered in the design and suggestions for improvisations provided in the instructional materials. Activities were designed such that available resources could be used to enhance Chemistry and science learning in general (figure 4). New teaching approaches were infused in the design of the practical work activities.

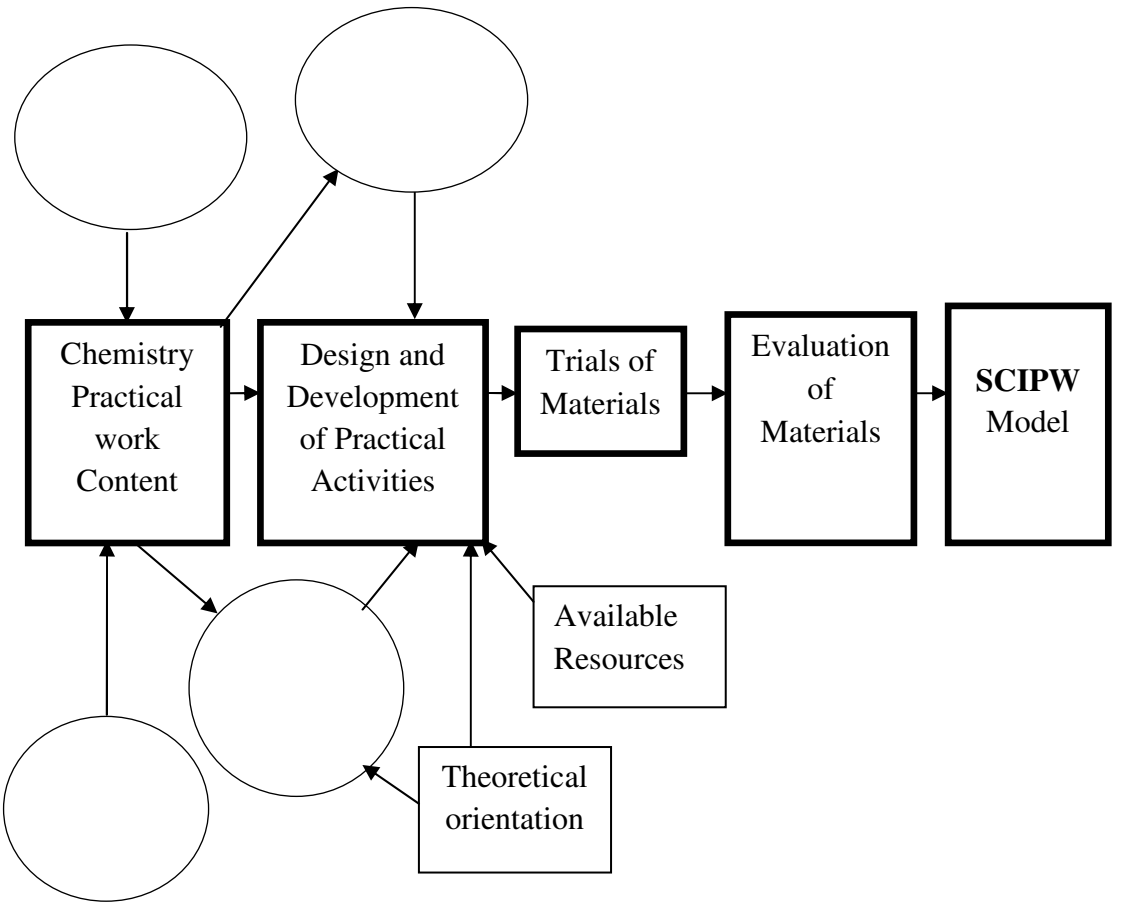

Figure 4: Stage 3 of SCIPW Model: Design and development of instructional activities

Five areas of science practical work designed to emphasize instructional materials were identified as science content, scientific practices, literacy practices, participation structures and assessment modes (Davis, et al 2014). Design specifications were formulated with detailed characterization of each of the five areas of learning. The first prototype of instructional materials was then designed. These materials included the teachers' guide (which was the main document) and a brief student guide. The main focus of the teacher guide was to support the teacher in guiding learners through conducting practical activities in an investigative way.

The role of the teacher was presented as to design meaningful experiences in learning environments while that of the learner was to join discussions and collaboration activities. Designed meaningful experiences were to motivate students to construct new knowledge in their long term memory (Isman, 2011).

To play its functional role, the quality of instructional materials at this stage should be carefully checked. Three sets of criteria for judging appropriateness of instructional materials used were; pedagogical appropriateness, science content and presentation format (The National Academy of Sciences, 1998; Rubdy, 2003). It was also considered necessary to have the instructional materials appraised by the teachers who are the users of such materials in the classroom. The process was iterative, with the outcome of one appraisal leading to the refinement of the materials. A good number of teachers on pre-service training in chemistry teaching were found important in the appraisal of the materials. This was boosted by the fact that a high percentage (91.5%) of the teachers indicated that the materials reflected the national syllabus and were usable in chemistry laboratory. Most of the teachers (68.1%) agreed that learners could cope with the approach of teaching suggested in the materials. They suggested various adjustments on time allocation for laboratory activities, provision of suggestions for improvisations and alternative designs and inclusion of safety precautions. These suggestions were used in the review and re-organisation of the instructional materials.

To reinforce this important stage, three teachers with long experience in the teaching of chemistry at secondary school level were given an opportunity to appraise the materials. From their recommendations, more adjustments were made on the timings of the practical activities and more guidance on teacher activities especially on assessment provided. To cap it all, two science education experts lecturing at the university appraised the materials and research instruments that were used in the study. These appraisals also offered quality check on relevance and consistency of the instructional materials. The instructional materials were redesigned leading to the development of the third prototype.

4.4. Stage Four of SCIPW Model: Trials of Materials

The third prototype was tried out in a laboratory set-up. This was akey stage and it aimed at testing the practicality of the materials in a laboratory set-up. Ottevanger (2013) describes practicality as the usability of the intervention in the settings for which it has been designed. Isman (2011) supports this process when he argues that problems in instructional design are identified during testing of prototypes. Three teachers and their form one learners participated in this section of the study. During the tryout, a consideration of resources available for use in schools was made. Some adjustments for improvisation and grouping learners for practical activities were made. The teachers used teacher guide to assist in the lesson preparation and implementation. Time available for teaching was a major consideration at this stage as it seemed it would take longer than the convectional approach (figure 5).

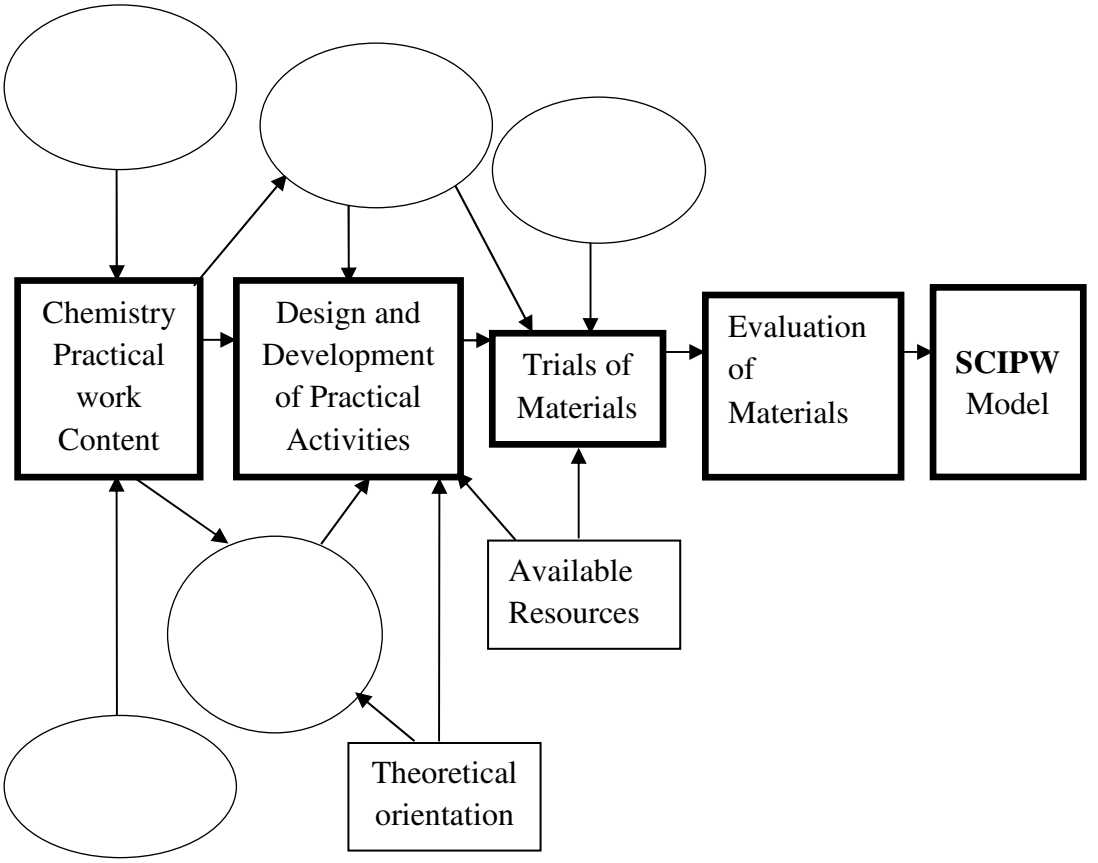

Figure 5: Stage 4 of SCIPW Model: Trials of practical work instructional materials

During the lesson activities lesson observation was done by the researcher. It was observed that teachers were able to understand and utilize the instructional materials appropriately. Analysis of lesson observations showed that 81.06% of expected teacher actions in an investigative practical work set-up were observed. Grouping of learners was, however, affected by lack of sufficient resources and time for improvisation as well as large class sizes considering the intense guidance required from the teacher. To boost on information uptake, a logbook was introduced to gather detailed information regarding teacher experiences during planning and implementation of the lessons. Teacher interview at the end of the lesson series provided clarification on areas they mentioned in the logbook and their experiences in the laboratory. Student interviews were used to gather information about effectiveness as perceived by the learners. The observations and views were used in the redesign of the materials producing another prototype for evaluation in stage five.

4.5. Stage Five: The SCIPW model

The materials were further refined after the first try-out and used by five teachers in their Form One classes. This was the evaluation of the materials in laboratory use. Evaluation of instructional materials was based on practicality and effectiveness (Nieveen, 1999), which Huitt et al (2009) identified as effectiveness, efficiency, and appeal. Practicality (efficiency) was based on: the ability of the instructional materials to support teachers in the teaching of investigative practical work; relevance of the materials in the teaching of secondary school

chemistry; clarity of instructions in the materials; complexity of the teaching approach, congruence with current teacher practice and cost associated with use of the approach (Ottevanger, 2013; Nieveen, 1999).

Effectiveness was based on achievement of desired objectives and student response to instruction. Evaluation involved observing the teacher activities during the practical lesson and recording the observations as guided by the observation schedule. Learner participation as they interacted with available resources pointed to the effectiveness of the lesson. Data on Practicality and effectiveness of the materials as gathered through lesson observation, logbook recordings, interviews, student questionnaires and concept maps. These informed the refinement and development of the final model of instructional materials for secondary school chemistry practical work (figure 6).

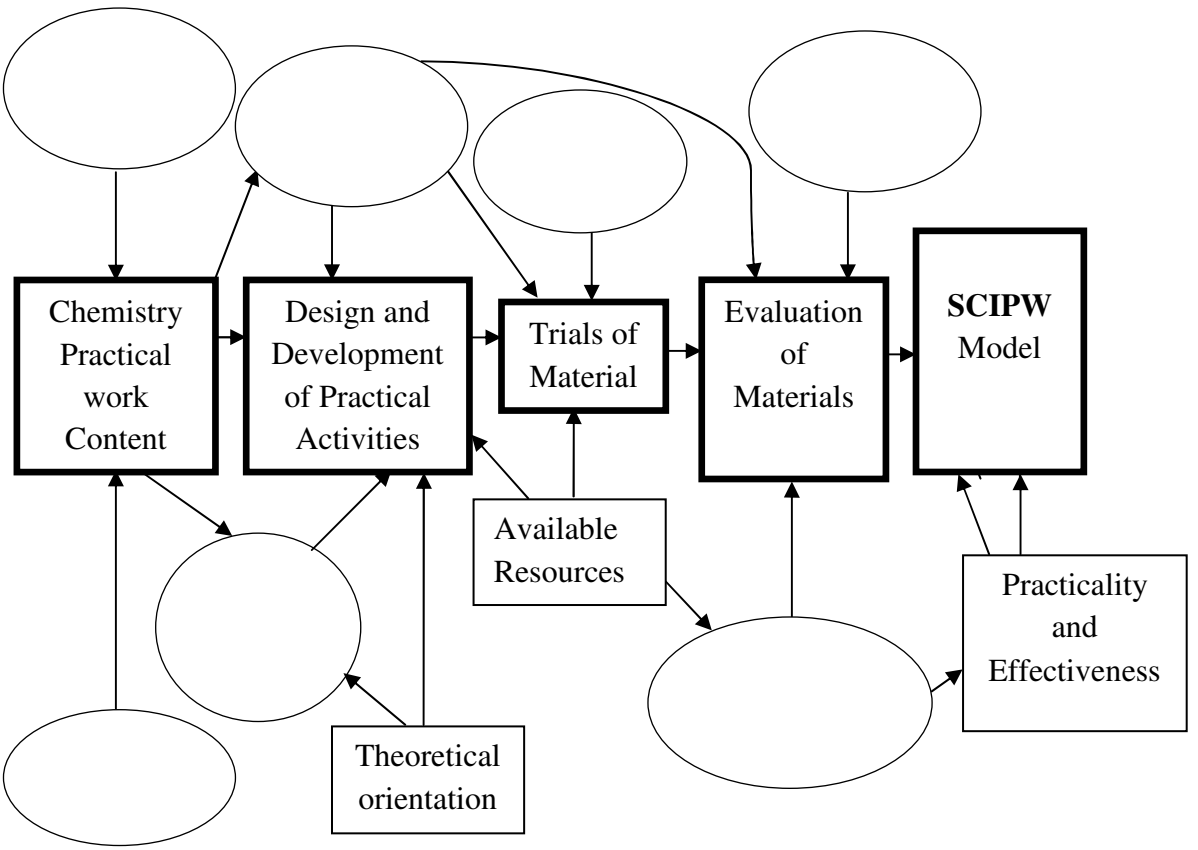

Figure 6: The SCIPW model for developing investigative practical work materials

Teachers' views indicated in the logbook as well as expressed during teacher interviews indicated that they found the instructional materials to be providing them with necessary support for learner-centred investigative practical work. The instructions were clear and easy to follow and the complexity level was within the ability of both the teachers and the learners. Teachers, however, found the approach incongruent with their conventional practical lessons. They pointed to the challenge of large classes with the amount of coordination required in the approach of teaching. They also felt that learners were challenged in involving themselves through the thinking and planning of the processes of investigation. The indication with continued use of the

approach in the six lesson series was that learners tended to adapt and also liked the new approach. It was realized that the cost of resources was higher than usual and the demand on teachers' time and participation was also high. The teachers, however, indicated that the outcome of learning would be higher and thus worthwhile, as one teacher after the lessons expressed *"I have never thought of asking learners to formulate their procedures, it however would involve learners more and make them understand the concepts"*

Effectiveness of an investigation is achieved when using the intervention results in desired outcomes (Ottevanger, 2013). Analysis of lesson observation schedule indicated that 80.92% of expected teacher actions during the investigative practical lessons were observed. The high percentage was taken as a positive indication of practicality and effectiveness of the instructional materials. Learners were also required to give some feedback by completing concept maps linking the concepts and skills learnt through the use of the instructional materials. Use of concept mapping in the learning of chemistry is important in summarizing important concepts learnt, thus aiding conceptualization (Trowbridge & Wandersee, 1998; Kilic & Cakmak, 2013). The mean score from the concept maps was 80.55% which was also taken as an indication that meaningful learning had been achieved. Learners were requested to complete a questionnaire indicating their perception concerning the lessons taught using the instructional materials. Most learners indicated that they were able to participate in the lesson activities (95.6%), enjoyed the taking part in the lesson (90.7%), were able to understand more (88.2%) and felt motivated to learn chemistry (83.3%). Going by these indicators, one can conclude that learners found it quite an academically enriching experience.

5. Conclusion

The main goal of Secondary School Chemistry Investigative Practical Work (SCIPW) Model is to give a route map to organize the development of instructional materials for use in chemistry learning of practical work which ensures the learners are intellectually and physically involved in the Chemistry learning activities. A learner is active during the learning activities, which can lead to better understanding of science concepts and development of both manipulative and process skills.

SCIPW model can be used to develop instructional activities of practical work not only in the chemistry subject but also in other science subjects. The iterative nature of DBR used in the study ensured feedback at each stage in the design which then enriched the next stage. The materials to be used to generate such a model should go through various evaluation activities (Ottevanger, 2013, Nieveen, 1999; Motswiri, 2004). These included appraisals by chemistry teachers who used the instructional materials and expert appraisal to enhance consistency.

SCIPW is based on instructional systems design that covered five stages; analysis, design, development, implementation, and evaluation of instructional materials. Such a design should ensure that it closely conforms to the larger educational policy and structure of education in a given country to be acceptable by users. In this study the model closely relates to the Kenya Certificate of Secondary Education (KCSE) syllabus and Kenya National Examinations Council (KNEC) regulations. For chemistry and science teachers in general, this is a process to try out, either partially or in full for it brings lots of benefits to the learners.

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MODEL OF THE GALAXY YEAR OF CLIMATE CHANGE

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Abstract

This article deals with the study of dependency between climate change and changes going in the mass balance of the Earth. The activation of tectonic processes and atmospheric anomalies in the last two centuries allows suggest that internal energy of our planet is increasing. The reason of this process can be explained with the increase of mass of the Earth. In this work, the probabilitythat climate hesitations periodically observed within shorter periods are connected with changes going by the mass balance of Earth is scientifically substantiated. It is indicated that growth of the mass balance of Earth leads to global warming whereas reduction of the mass balance corresponds to climate cooling.

Keywords: Galaxy, climate change, mass balance, thermodynamic, dissipation

1. Introduction

In spite of wide researches on climate changes and their reasons, carried out in the last over 250 years by world scientists, the reason of this matter is still open. Currently, problems and complications created by climate change are at the center of public attention throughout the world. Especially, warming and relevant complications that may happen due to greenhouse effect, as results of mathematic modeling indicate, are the subject of increasing anxiety at global scale. It is interesting that atmospheric processes of every territory are constant, whereas physical and geographical peculiarities can change even in every minute. In this connection, climate peculiarities are changeable, too: periods of warming and cooling typically are alternating.

It is known that hydrodynamic methods are being applied more in researches devoted to climate since the second part of twentieth century. In this connection, general atmospheric circulation as well as the simple climate models has been preferred more in a number of countries. It is remarkable that certain results of employing these models do not seem optimistic. Thus, the assumed negative consequences of greenhouse effect, connected with increasing carbon dioxide, are not being accepted unequivocally among population. The opportunities of these models in terms of prognostication of climate are probably limited due to a few reasons. The two of them is notable. The first is that the number of parameters really reflecting atmospheric processes is innumerably too much, and secondly, only solar energy is regarded as a source of energy. The last factor is responsible for the fact that these models are basing only on energy of instability after one year of integraling.

2. New approach elucidating the reasons of climate change

As is known, indicators of climate of the Earth are continually changing. On the background of stationary forces adopted by researchers, the reasons of these changes remain so far unknown. Atmospheric precipitations, as well as temperature of air, and other climatic indicators are continually changing in various regions. In one region of the planet, absence of precipitation is observable for a long period whereas other years can be found as rainy, as well as floods and inundations can emerge in the same territory during a few years, or other way round. In the last 10-15 years, the increase of repetition of atmospheric anomalies as well as the activation of tectonic processes in Europe, Americas and other regions makes the issue more topical.

There are some data about different periodical changes dated to glacial and interglacial epochs in the researches dealing withpaleoclimate (3). This and other relevant works give a basis to suggest about higher probability of periodical character of climate change.

3. Essence of subject

It is known that all systems of heaven in the space are circulating over certain centre (the Arche). The complete circulation of Solar system (with a speed of 250 km/sec) round this centre lasts about 200-250 million years. This period is called the year of Galaxy (1). Probably, in accordance with Solar year and the seasons of the Earth, each Galaxy year changes over every four seasons, while each season of Galaxy changes within around 60-65 million years. In this connection, climate changes may happen each season, or four times within the one Galaxy year.

So it is estimated that climate change are happening over each 65 million years. This period is nearly corresponding to glacial and interglacial periods (2). The reasons of this change can be explained by the change of balance in the Earth. In accordance with the law of keeping of balance of mass, amount of interplanet fragments thrown onto the Earth is equated to the mass of fragments dispersed from the Earth. In the last 200 years, the activation of tectonic processes and atmospheric anomalies in the Earth give a base to suggest that internal energy of our planet is increasing. The reason of this process can be explained with the increase of mass of the Earth. Just because of the remarked reasons, the analogues among perennial air processes can be hardly identified.

4. Mass changes balance

It is known that 44 ton of heaven fragments daily, as well as around 16 thousand ton of these fragments annually is being thrown to the Earth (1). In accordance with the keeping of balance, mass of the thrown fragments must equate the mass of those dispersed out from the Earth. According to preliminary investigation carried out on the basis of the Maxwell formula, fragments may leave the Earth if their speed exceeds 11 km/sec as this speed enables to excel gravity. Such high speed of fragments is observable only at higher spheres of the atmosphere (above 200 km), i.e. in condition of higher running distance among molecules. In this connection, probability of equality of masses between the amount of heaven fragments, annually thrown on and dispersed from the Earth (for keeping balance) is less. In the meantime, the growth of concentration of fragments, dispersed into the atmosphere evidently impedes the increasing of speed of dissipated fragments. As a result of this, definite surplus of mass in the Earth may be reflected after certain period in the break of the balance. So, considerable change occurs in all systems of the space in the every Galaxy year. For this reason, currently the society all over the world is not aware of extinct cities and settlements, while only legends about them are available. Today, remnants of sunken cities throughout the world are of big interest.

5. According to archeological studies

The two identified places - Yonagouni fortifications and 'Mega-city' in the deep waters of the ocean near the north-eastern Cuba clarify many legends. The last city discovered at 120 ft of depth is considered to have existed 9500 years ago. The materials used in building of this city where ancient humans have lived are dated to 2500 B.C. In 1967, the scientific submarine of 'Aliminaut' discovered a way in the beaches of Florida stretched over 15 miles at the depth of 3000 feet near southern Carolina.It is surprising that this way has been constructed with using compounds of aluminum, silicone, calcium, iron and magnesium. Archeologists have found a complete building at the end of this way. Until now, the technology of this building dated to 10000 years ago remains unknown. In 2004, the tsunami destructively affecting South-eastern Asia revealed the city of Mahabalipuram out from sandy mountains (4). A series of other discoveries can be shown as examples while many others remain unrevealed yet. All these findings show that the history of humanity is not too long. The reason is related with periodically repeated natural catastrophes worldwide. Such large-scale natural catastrophes can be entailed only as a result of break of interplanetary ties. Therefore, information about many sunken ancient cities and villages are unavailable today.

6. Little-term changes in climate

Shorter periods of climate change at 30, 40, 50 etc. years are known. Warming and cooling periods have been repeated 3 times from the early 20th century up to present time. The implemented observations allow suggest that the warming corresponds to period of increase of Earth's mass as the density increases in accordance with the internal energy, while the period of cooling may occur in period of slight reduction of this mass in connection with the decrease of the density. For this reason, higher activity of tectonic motions happens in period of warming when the mass of Earth increases. The heavy earthquakes in Assam (1897), Shamakhi (1902), Messina (1908), Kanto (1923), Crimea (1927), Spitak (1988), Japan (1995 and 2011), Turkey (1999) and China (2008) have occurred just in periods of warming, causing huge devastations.

7. Calculations

The leading role of natural forces in climate change is undeniable. According to the thermodynamic balance of gas molecules, the Maxwell formula is as follows:

$$dn = 4\pi n \left(\frac{m}{2\pi kT}\right)^{3/2} v^2 e^{-\frac{mv^2}{2kT}} dv,$$

where dn is the number of molecules per unite of volume in condition of v speed limit and v+dv interval; n is the expressed concentration of gas molecules; m is the mass of molecules; v is the speed of particles; T is the temperature of particles; and k is constant of Bolsman (1,38. 10^{-23} C/ κ). The expression of $F(v^2) = \frac{dn}{n}$ indicates probability of condition when particles' speed equates the above-mentioned figure (dv=1) and is called distributing function.

According to implemented calculations on the basis of Maxwell's formula, distributing function of temperature increases in accordance with the rise of temperature, i.e. the number of particles, speed of which is v>11 km/sec (above the critical speed) grows. Moreover, the speed of particles slows down due to the collision of particles within the border layer. In this connection, the exceeding of speed of dissipation is possible only at higher elevations (500-600 km) of the atmosphere. This elevation is called the elevation of dissipation where the higher running distance among molecules makes up around 100 km.

8. Conclusion

According to results of calculations, double growth of mass of fragments in the atmosphereleads to decline of number of dissipated fragments approximately as six times as less, whereas double rise of air temperature results in increase of those fragments about as four times as much.

Climate hesitations periodically observed withinshorter periods are connected with changes going by the mass balance of Earth.

Growth of the mass balance of Earth leads to global warming whereas reductionof the mass balance corresponds to climate cooling.

Intensity of tectonic motions typically increases in period of warming and vice versa.

Thus, climate change occurs periodically 4 times in the Galaxy year (once in every 60-65 million). The role of anthropogenic factors in climate change can be measurable in regard to the impact on mass balance.

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Biotechnology Interventions for Production of Good Quality Seed Canes

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Abstract

Tissue culture of Sugarcane results in production of a large number of disease free and true to type sugarcane platelets within a shorter period of time. The technology, if successfully incorporated into the system of seed multiplication in sugarcane can be used as breeders' seed in a two tier system of hardened clean tissue culture plantlets as starting planting materials from which the conventional three-budded sets would be obtained to organize the foundation and certified seed production. Available micropropagation technologies for producing commercial seed through the convention tissue culture, single-budded sett (Mudas Pre-Brotadas or mpb) and temporary immersion bioreactors (TIBS) will backstop the existing and emerging sugar companies through the production of good quality sugarcane seedlings. Adopting the micropropagated seedling technologies will impact on better yield and sugar recovery. Thus, making the sugar business more profitable in the long run.

Key words: biotechnology, micropropagation technologies, seed cane, local sugar industry, benefits

Introduction:

Sugarcane is an important source of commercial sugar globally, accounting for nearly 70 per cent of the world sugar production. Besides being a source of other products like animal feed, antibiotics, particle board, bio-fertilizer and raw material for generating electricity, sugarcane has lately emerged as an important base material for bioethanol production. In view of the depleting petroleum reserves, most countries are seeking alternative plant- based renewable fuel resources. Biofuel production has doubled in the past five years and is likely to double in the next five years. In Brazil, a dominant producer of bioethanol, nearly 90 per cent production is from sugar cane. Other countries are expressing major interest in sugarcane-based bioethanol production

The preponderance of diseases is identified as one of the factors limiting production of both industrial and chewing sugar cane in Nigeria (Wada, 1997). The other major constraints identified are inadequate and late allocation of farms, inadequate credit and low cane yield (Girei and Giroh, 2012). More importantly, there is an on-going need to provide durable disease and pest resistance in combination with superior agronomic performance. More importantly, there is an on-going need to provide durable disease and pest resistance in combination with superior agronomic performance. The issue of low cane yield should be addressed through the provision of high yielding, disease resistant, productive and pest/disease sugarcane varieties. Sugarcane being propagated by vegetative means, has a low 1:6 to 1:8 seed multiplication rate due to which seed production of newly released varieties is invariably slow. The seed accumulates diseases and pests during several cycles of field production. Hence, non-availability of disease-free, true to type planting material is a major constraint in improving sugarcane productivity.

Important developments that have occurred in sugarcane biotechnology to overcome the constraints in developing more productive and useful cultivars have been discussed (Sanger *et al*., 2011; Suprasanna *et al*., 2011). Biotechnology offers excellent opportunities for sugarcane crop improvement. Commercial sugarcane, mainly the interspecific hybrids of *S. officinarum and S. Spontaneous,* would be greatly benefited from biotechnological improvements due to its complex polyploid–enabled genome, narrow genetic base, poor fertility, susceptibility to various diseases and pests. More importantly, there is an ongoing need to provide durable disease and pest resistance in combination with superior agronomic performance in the commercially exploited clones. This led to considerable research in different areas of biotechnology pertinent to sugarcane breeding and disease control. According to Sengar *et al*. (2011) biotechnological approaches for sugarcane improvement have been applied in the areas of: (1) cell and tissue culture for rapid propagation, molecular breeding and genetic transformation; (2) engineering novel genes into commercial cultivars; (3) molecular diagnostics for sugarcane pathogens to improve exchange of *Saccharum* germplasm and the related genera; (4) developing genetic maps using molecular marker technology; (5) understanding the molecular basis of sucrose accumulation in the stem; (6) molecular testing of plants for clonal fidelity; (7) variety identification and (8) molecular characterization of various traits.

The scale and pace of biotechnology revolution has begun to impact over lives in so many ways that it appears that civilization is moving into the age of biotechnology (Runge and Ryan, 2003). In Nigeria and other developing countries in Africa and beyond are currently building the capacity for research and developments in biotechnology. This is in contrast to other developed and developing countries where it is a growing industry offering remarkable economic, social and environmental opportunities in the years ahead (Usman *et al*., 2013; Usman and Falaki, 2013). For instance, it was reported that sugarcane growers obtained an average increase in yield of 28 tones/ha by simply changing drom conventional setts to planting material derived from tissue culture plantlets (Sawant *et al*., 2014). This paper highlights on tissue culture based interventions of producing quality seed canes.

Conventional Tissue Culture:

The production of quality seed through micropropagation technique is well recognized now. The sustained high production of sugar per unit area depends primarily on continuous supply of adequate quantity of good quality seed cane, which has to be genetically pure, free from diseases, pests and with no nutritional disorders. This can only be achieved by applying the tissue culture techniques. Since the plants are free from infections, so the original vigour of the newly bred variety is maintained**.** Sugarcane is a vegetatively propagated crop and normally requires 7-8 years or even more, for a newly developed variety to spread at large scale. During this period, deterioration of various yield and quality characteristics is inevitable prior to commercial use on account of systemic infections during vegetative multiplication it also helps in the rapid seed multiplication of newly released varieties which is of particular importance in sugarcane where, the normal seed multiplication rate is very low.

Sugarcane production is challenged by diseases like red rot, leaf scald, ratoon stunting, grassy shoot and mosaic (Wada, 1997). Tissue culture method (micro-propagation) is the only alternative approach for fast multiplication of a variety in its original form and. Micro-propagation is very effective in rejuvenating/reviving the well adapted promising local cultivars facing gradual decline or degenerating in yield and vigour by freeing them from diseases due to accumulation of viruses and other systemic pathogens during prolonged vegetative cultivation. In addition Moist Hot Air Treatment has not been effective against mosaic virus. The meristem culture is the only method to remove the SCMV (Sugarcane mosaic virus) as the meristematic tissue remains free from virus disease. The cells of the meristem are genetically highly stable and, hence, the plants produced from them are generally identical to the

donor plants, except for the occurrence of rare mutations (Hendre *et al.,* 1983).The genotype can be sustained over a long period in culture and this serves as alternative means of conserving the sugarcane germ plasm. Conventional tissue culture is widely adopted for commercial sugarcane seed production in many countries Considering the above advantages, micro- propagation has an important role to play in the 'Seed Production Chain' in sugarcane. In our laboratory we have developed a protocol for micropropagation of elite sugarcane genotypes and this has been applied on current sugar estate popular varieties SP71-6180, Co997, Co6806, B47419, BD 98—001 and M2119/88 (Sani *et al*., 2012).

Development of tissue culture technology for rapid multiplication of disease-free planting material has been an important step towards quality seed production in sugarcane. Australia, India and the Philippines in the Asia-Pacific region have already applied this technology for commercial seed production and the benefits have become evident through rapid multiplication and distribution of elite varieties and increased sugarcane production. The experiences of these countries would be of considerable benefit to countries like Nigeria that are in the process of adopting micropropagation for their seed production programs. Tissue culture technique (micropropagation) can provide mass, uniform, disease free plantlets within a short period. However, High cost involved in micro propagation is a major constraint to its popular use in sugarcane. Technologies for cost reduction in sugarcane micropropagation, that include direct regeneration of complete plantlets on the same medium and substituting *in vitro* rooting by *ex vitro* rooting in conventional micro propagation (Pandey *et al.*, 2011)**.** The limitation of the technology is reported to be the current cost of production. The major part of the cost derives from the labour required for transfer of the cultures on a two-week cycle. Process automation or semi-automation may reduce the cost in future

Temporary Immersion Bioreactor System (TIBS) for Sugarcane Micropropagtion:

This new bioreactor system for microprogation incorporates a number of features, specifically designed to simply its operation and reduce costs. (Watt, 2012). The TIBS operates on the principle of temporary immersion. It consists of two vessels, one for the plant tissues and the other one for the liquid media coupled together through autoclaveable silicon tube that permits the flow of the liquid media from one vessel to the other. This flux is driven by suction pressure, generated by pumping micro-filtered compressed air into the media and plant tissue containing vessels in alternate cycles. The whole system is sealed up and automated and this offers the best conditions for efficient, large scale micropropagation (Ruffoni and Savona, 2005). TIBS has the advantage of reducing manual labour; enables the change of culture media instead of transferring the plants; does not require jellifying substances; nutrients are more readily available to culture tissues. The main challenge with this system is that microbial contamination is more difficult to control (Balogun et al. 2012).

Plate 1 presents the TIBS as operated in our bio-factory. An efficient TIBS protocol has been developed and tested using sugar estate preferred sugarcane varieties. The micro-shoots of the varieties are at first initiated using meristem tip or immature leaf whorls. The micro-shoots are then conditioned for liquid media conditions by gradual weekly transfer to media with reduced levels of gelling agent. This has led to the more rapid multiplication of micro-shoots of the varieties. The challenges of oxidation of media and contamination are being attended (Usman, 2015).

Plate 1 : Plantlets of sugar estate popular choice varieties transferred to Temporary immersion bioreactor system (TIBS) for rapid multiplication

Mudas Pre-Brotadas (mpb) or Pre-germinated Seedling Technique:

The *Mudas Pre-Brotadas* (MPB) or pre-germinated sugarcane seedlings nursery is a new technology, developed by Cana Program of Brazil that aims to increase the efficiency and economic gains for the establishment of nurseries, replanting areas marketed and possibly renovation and expansion of areas of sugarcane. Another major benefit is the reduction of the amount of seedlings that goes into the field. To plant a hectare of sugarcane, consumption seedlings falls 18-20 tonnes in conventional planting to 2 tons in MPB. This means that 18 tons of cane that would be buried as seedlings will go to the industry to produce alcohol and sugar thereby generating gains. The pre-germinated sugarcane seedlings nursery or the *Mudas Pre-Brotadas* (MPB) (Segato, 2014).

The seed canes are cut into single budded setts using the seed cutter and sometimes manually using hacksaw. The single bud setts are then washed with a weak solution of detergent using brush and rinsed with running water. The setts are soaked in 2% fungicide (Mancozeb 80WP) solution for two (2) hours with occasional stirring. The setts are then rinsed with water and then immersed in 2% solution of chlorox (a commercial bleach) for 0, 15 or 30 minutes. The zero chlorox treatment served as control. The setts were then rinsed three (3) times in water and planted in germination trays using bagassecilo or coconut husk as substrate.. The trays are then placed in humidity chamber and watered daily for a period of three weeks (Plate 2).

A protocol for one step regeneration of seedlings using single germ setts (mpb) was developed for sugarcane cultivars C06806 and SP71-6180. Using this technique, starting with single germ setts, seedlings reached up a height of 10 – 14 cm in 21 days and complete plants (seedlings) were ready for transplanting in the field within 50 – 60 days. In our biofactory, a total of 4226 seedlings were raised using mpb, comprising of Co999 (1447), B47419 (250), SP71-6180 (1344) and Co6806 (1185) seedlings. Jalaja, et al. (2008) reported that in trials conducted with SmartSett seedlings and plants produced through one-eye setts at harvest revealed that while there was some genotypic effect, the plants of the two groups could not be statistically differentiated. A yield of 101 t/ha and commercial cane sugar (CCS) of 15.17 per cent of SmartSett seedlings was comparable to the data from traditional sett propagated material of 104 t/ha cane yield and CCS of 15 per cent to 15.5 per cent despite the seedlings having been planted late in the planting season. Applied to our condition the mpb technology will lead to saving in the seed cost as the seed requirement is only about 2-3 tons/ha against the normal seed requirement of 10-12 tons/ha. There will be Synchronous tillering leading to uniform growth and maturity of stalk population, there will be sufficient time for main field preparation, saving in water and fertilizer and better weed management. These will impact on better yield and sugar recovery, thus, making the sugar business more profitable in the long run.

Building a Sustainable Seed Cane Supply System

The technology if successfully incorporated into the system of seed multiplication in sugarcane can be used as breeders' seed in a two-tier system of hardened tissue culture plantlets and conventional three-budded sets initially and this should graduate to sole system of the former for the sugar industry to benefit fully from the potentials of this system. In our laboratory we have developed micropropagation technologies for producing commercial seed through the tissue culture, single-budded sett (Mudas Pre-Brotadas or mpb) and temporary immersion bioreactors (TIBS) three-tier nursery program using tissue culture seedlings (Usman, 2015).

The projections of seed demand for sugar factories based on crushing capacities is presented in table 2. Assuming a crushing period of 160 days per year, taking the average yield of cane as 75 tonnes per hectare and a seed multiplication ratio 1:10 from breeder to foundation and then to certified seed . The quantity of micropropagated seedlings needed as breeder seed under the 2-tier seed multiplication according to the crushing capacities of seed factories is presented. A 10000 tonnes capacity per day (TCD) factory will require 330,000 seedlings to cover 22 ha of breeder seed from which seed canes that would be obtained to plant 214ha and 21400ha Foundation and Certified seed fields in the second and third years of planting, respectively. This will supply the seed cane needed to establish commercial production fields to produce the 1.6 million metric tonnes of cane needed for crushing by the factory in the year. It is envisaged that the Zaria factory with its' installed capacity to produce 1,000,000 seedlings per annum and others soon to be established should backstop the existing and emerging sugar companies through meeting their demands for good quality sugarcane seedlings leading to the establishment of more productive sugarcane estates

Table 1: Projection of Area under Certified, Foundation and Breeder seed nursery required to be planted every year under 2-tier system of seed multiplication

Capacity of the factory (TCD)	Total cane required(MMT)	Commercial Cane area (ha)	2nd Tier Using Conventional Setts		Ist Tier Using Micropropagation	
			Area Certified seed	Area Foundation seed nursery	Area Breeder seed	No of seedlings required
100	0.16	2140	240 ha	24 ha	3 ha	45000
5000	0.8	10700	1070 ha	107 ha	11 ha	165000
10000	1.6	21400	2140 ha	214 ha	22 ha	330000
15000	2.4	32100	3210 ha	321 ha	32 ha	480000
25000	4.0	53500	5350 ah	535 ha	54 ha	810000

Conclusion:

Biotechnology is creating massive volume of information that is transforming the world's chemical, pharmaceutical and agricultural establishment. The biotechnology interventions presents an opportunity for sugar estates and sugarcane growers by providing more productive and sustainable planting materials. It is a proactive approach for alleviating problems of sugarcane production. This will greatly resuscitate and expand the sugar industry in developing countries like Nigeria.

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Disaster Reporting in Print Media

(Special reference to selected newspapers in Sri Lanka)

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Abstract

Environmental information that will be important in future to build the sustainable society. Environmental reporting is, regardless of its name or disclosure media, to promote communication of organizations, to fulfill its accountability regarding environmental efforts in their activities, and to provide useful information to decision making of interested parties.

Problem of the study was how print media reported one selected case in Sri Lanka in 2014.Objective is to study about disaster reporting in print media. Methodology is content analyzing. Selected three newspapers and content analyzed the newspapers in seven days. Time frame was 30th October 08th November. Selected three newspapers Rivira,Mawbima, Lakbima in seven daysafter the disaster. Analyzed headlines, articles, features, cartoons which related to the selected incident.

More spaces had allocated to report this incident, mostly colour photos used and victim's photos published. And most of the articles written to aroused this in reader's emotion. And selected newspapers not given proper attention in media ethics.Media wants to be more responsibility during crises or disasters.

Keywords

Environment, Communication, Disaster, Reporting

Introduction

Reporting to and providing the public with information on the environment is becoming increasingly important for governmental environmental agencies at the regional, national and international levels.

According to the business dictionary **"environment is thesum total of all surroundings of a living organism, including natural forces and other living things, which provideconditions for development and growth as well as of danger and damage**"-Business Dictionary

As environmental consciousness in entities activities has risen in recent years, the importance of environmental communication and social accountability, which promote active and voluntary disclosure of environmental information about their environmental activities and considerations for environment matters in their activities and improve their reputation for their environmental efforts and performances, has been widely recognized. Environmental information that would be considered to be necessary from the view-points of

organizations' social accountability, providing useful information to interested parties for decision making and providing information which could help readers' understanding and increase the objectivity of the contents as an environmental communication tool.

Environmental information that will be important in future to build the sustainable society.Environmental reporting is, regardless of its name or disclosure media, to promote communication of organizations, to fulfill its accountability regarding environmental efforts in their activities, and to provide useful information to decision making of interested parties.

Environmental reporting refers to systematic and holistic statements of environmental burden and environmental efforts in organizations' activities, such as environmental policies, objectives, programs and their outcomes, organizational structures and systems for the environmental activities, in accordance with general reporting principles of environmental reporting, and that is published and reported periodically to the general public.
"Environmental reporting" can be called in different names depending on its purpose and contents, such as a "sustainability reporting," which include social and economic aspects or a "social and environmental reporting," which describes activities based on corporate social responsibility.Environmental reporting can be considered as "an open-window of organizations and a significant tool for environmental communication." Interested parties outside of the organizations are able to "view" the intended organization's ideas and measures towards environmental issues through this "window." Organizations can also understand the needs and the ideas of interested parties through this "window".

When happened a natural disaster reporter or journalist had a big role to play. Some possible actions are;

- Inform the public with timely and factual information
- Advice the public about actions to be taken
- Inform on actions being taken by authorities and aid groups.
- Relay messages concerning the welfare of isolated or trapped groups.
- Facilitate communication among affected people and their relatives, friends, families in other parts of the country or worldwide.
- Highlight the needs of survivors.
- Communicate potential secondary risks to minimize further disaster or damage.

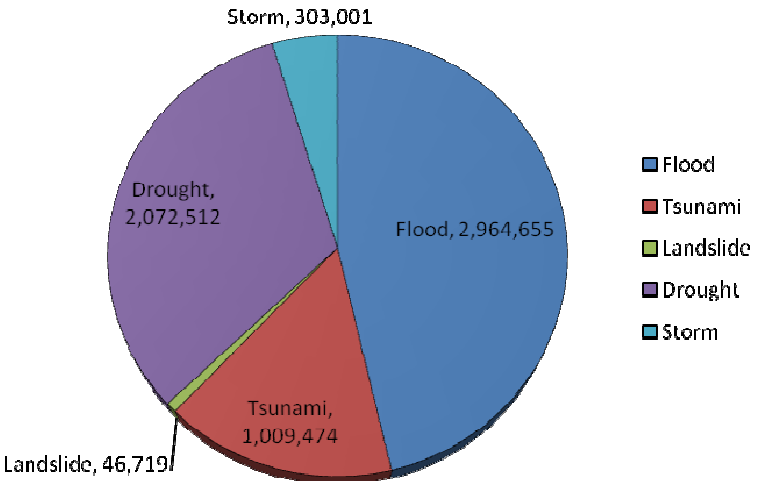
Code of Ethics help to standards require newspapers to strive for accuracy and professional integrity, and to uphold the best traditions of investigative journalism in the public interest, unfettered by distorting commercialism or by improper pressure or by narrow self -interest which conspires against press freedom. Newspapers and journalists, while free to hold and express their own strong opinions, should give due consideration to the views of others and endeavor to reflect social responsibility. But in practice we saw many more situations most journalists breach this code of ethics.

According to Code of Professional Practice (Code of Ethics) of The Editors Guild of Sri Lanka adopted by the Press Complaints Commission of Sri Lanka journalists need to obey these ethics.

Some ethics in editorial guide are;

- Accurate reporting
- Corrections and apologies
- Opportunity to reply
- Confidential sources
- Privacy
- Harassment and subterfuge.

Based on information available on the people affected by natural disasters during the period 1974-2004 is given in the figure above which clearly identifies floods, drought, tsunami, storm and landslides as the most common natural disasters in Sri Lanka.



People affected by different disasters in Sri Lanka (1974-2004)

Torrential monsoon rain across parts of southern India and Sri Lanka during the last 4 or 5 days of October 2014, led to flooding and several landslides in Sri Lanka. Over 120 mm of rain fell in 24 hours between 28 and 29 October 2014 in Ratnapura, Sabaragamuwa Province. A severe landslide occurred in Meeriyabedda areain KotabathmaGramaNiladhari division inHaldumulla Divisional SecretariatDivisionin Badulla District on 29thOctober 204 at around 7.30 am.The impact of landslideaffected around330 people of57 familiesin Ampitikanda tea estate.

In this research studied selected case about disaster and analyzed selected newspaper contents related to this incident.

Research Design

Problem of the study was how print media reported one selected case in Sri Lanka in 2014.Objective is to study about disaster reporting in print media. Methodology is content analyzing.Selected three newspapers and contentanalyzed the newspapers in seven days.Time frame was 30thOctober08thNovember. Selected seven daysafter the disaster.Analyzed headlines, articles,features,cartoonswhich related to the selected incident.

Disaster Reporting in Print Media

Media plays a significant role in increasing awareness for disasters .The Media coverage of major disasters such as the 2004 Indian Ocean Tsunami and the 2010 Haiti Earthquake showed that media can have both positive and negative effects. Media broadcasts first-hand information from the area of the disaster. Immediately after the disaster occurs, media could be invaluable during the initial assessments, search and rescue.

Media coverage of disasters in 2005, and before, have varied considerably, with some disasters getting almost no coverage and others receiving a lot. The media is criticized for this by humanitarian organizations as well because of this, and yet these organizations also need the media to try and get their message out.

The Red Cross noted a number of these issues in its *World Disasters Report 2005*:

> **"Media coverage of the 26 December tsunami dominated headlines worldwide well into January – much longer than any other disaster in modern history. After the tsunami came a metaphorical tidal wave of donations. Aid workers worried that the tsunami would divert donor money and media attention away from the world's "hidden disasters."**
>
> **Many aid agencies regard media coverage of the world's crises as selective and stereotyped. But they still crave publicity, hoping it will generate more funding and attention for disaster relief.**(*Humanitarian media coverage in the digital age*, World Disasters Report 2005, Chapter 6, International Red Cross)

When reporting a disaster journalists need to clarify the accuracy of data.If not it will be a great problem. In selected case was a thoughtful natural disaster to Sri Lanka. Most of the families suffered a lot.I selected three newspapers and analyzed the contents.

The environment affects everyday life. People, sensitive about it, demand the due coverage of environment and the factors causing pollution, etc. Therefore the environment reporting can become a human service reporting. But in selected incident headlines,features,photos used create stories.

Major Findings were in three selected newspaers (Lakbima Newspaper,MawbimaNewspaper,Rivira Newspaper)

- Miriyabadda land slide incident was reported as their main head line, further it highlighted the death toll also.
- More spaces had allocated to report this incident.
- Mostly colour photos used and victim's photos published.
- Most of the articles written to aroused this in reader'semotion.
- More focused on grievances of the suffered people.
- Sensitive and emotional photos published.
- Exaggeratedly reported this incident.
- Not focused in media ethics properly.

Conclusions and Recommendations

In this research identified selected newspapers not reported this incident in responsible manner.And articles mainly written to arouse this in reader's emotion.Not focused in media ethics properly.Media wants to be more responsibility during crises or disasters. Reporters should confirm that the information being provided

is accurate. That the media can play a critical role before, during and after such incidents.Media have to be monitored and handled with care because it is media reports that distort what happens in a disaster and lead to Misunderstandings. Failure by media reporting may be result of myths created by the media.

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Impact of price and price policy on some strategic cereal crops in Iraq for the period 1943-2013

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Abstract

Prices and price policy *are a practical tool for treatment product deteriorating condition, due to import and lower selling prices of the consumer and the status of non-discrimination between locally produced goods and imported goods deployed in the Iraqi market and the high purchase prices .****Recipient****is a retailer and wholesaler and speculators usurers .The result weak purchasing power and the deterioration of the standard of living for the farmer and the consumer at the same time.*

The determination of agricultural commodity prices, especially for the grain crops prices, is very important for each producer, in order to increase agricultural production and improve the quality and this is what happened to the price and price policy in Iraq for the period 1940-2013. A set of determinants prevented the relative stability of prices for grain crops, so this was volatile and consumer index of high price are much compared with index for agriculture production, which is still below the required level .Iraqis Agriculture was realized with backwardness , low value-added agricultural production , weakness in the use of technology and increased water problem for political reasons with the countries source of the Tigris and Euphrates Rivers states. The result is increasing the problem of salinity and low productivity and low acreage despite the increase in financial allocations that can be useable for the purpose required because of finance and administrative corruption. Where investment funds used for non-agri. purposes.

The state tried to set prices for grain crops important farmers and across multiple conditions ;Royal Government for the period ***(1940-1957)*** *and the Republic Government for the period* ***(1958-1979)*** *and the Republic Government with crisis such as wars and economic blocked* ***(1979-2002)*** *and the democracy Government under occupation* ***(2003-2013)*** *. Elements of agricultural production in Iraq are present to contribute by more than 60% of GDP until 1980 which falls to less than 20% after 2003. The state supported the prices of grain crops, whether the final product prices or agricultural production inputs using technology and agricultural research. This did not solve the status of deteriorating agriculture ,despite the provision of fertilizers, pesticides and seeds, continued support loans in 2008 (the initiative for agricultural lending). Weakness had appeared for the effectiveness of the high prices, because of the rise in mass production costs which impact on the profit margin. As hardware of prices and support ,the agricultural production results did not show significantly affected and the damaged is producer and the consumer at the same time.*

Introduction:

Agricultural policy consists of three parts. They are; price policy, food security and international trade. Iraqi state intervened in setting prices in 1943 by Law No. 41 and continued its support for the prices of the final outputs and the production inputs of some strategic grain crops. That prices and price policy in Iraq gone through several stages during the period of search depending on the policy of the state of emergency or exceptional circumstances such as war (Iraq- Iran) for the period 1980 - 1987 ,Economic blockade in 1990 and the US occupation of Iraq in 2003.

These stages are:

- The first phase of 1943 to 1957.
- The second phase of the 1958 -1979.
- Third Stage of 1979- 2002.
- Forth Stage of the 2004 -2013.

Hypothesis of research says that the prices and price policy are an effective tool in guiding and distribution of economic resources among segments of society and economic sectors and must evaluate this hypothesis.

Aim of the research is to demonstrate advantages and disadvantages that accompanied the application of agricultural price policy in Iraq through various stages and its impact on agricultural production as well as comparisons of this activity among the various stages periods.**Search includes the following themes:**

1) Definition price and price policy and the factors influencing them.
2) Definition agricultural price policy, principles, objectives, importance, characteristics (features) and problems faced.
3) Evaluation what has been achieved in the development of trends in the prices of agricultural price policy within different time phases.
4) Conclusions and recommendations.

The first theme : Definition of Price and the Price Policy and the factors affecting:

The process of determining the price in a market economy is differed from that in the planned economy .According to the nature of economic theory, the market prices under full competition interact supply and demand forces until they reach the equilibrium price. Responsibility for determining the price in the capitalist system is the responsibility of the entity produced through cost study and the reality of the market and the nature of the variables in it such as the competition and supply and demand financial inflations and determine margin profit .Intermediate capitalist state specifies the price and planned after the deflationary economic crisis in 1929., It still represents the interests of the producers and owners of capital. In the planned economy the price appears as wholesale price, retail price, the price of fixed services ,scheduled price ,contract price, The price of agricultural and other industrial goods, consumer price and Foreign trade price and borderline price .The price is determined under central planning in line with the economic development plan and take the state to the principle of price stability and standardization.

First: The price is one of economic statistical tools, necessary to regulate economic life. Prices are multiple and varied. Field price means the price of agricultural production quantities prices throwing in the field, with fees , semantic transport up to and including wholesale prices and consumer prices **(Central Bureau of Statistics (NBS) 2011.112)**. Price is the value of the goods or service, expressed in money **(Marx 1969.49)**.**(Adam Smith)** says ;it is the amount of work that work of equal value of work. **(Ricardo)** says that the value of the good where the amount of work is greater than the value of work.

(**Marx**) says that it is the source of the work value, while the marginal school refers to the saturation and scarcity as a basis to determine the value . (**Marshall**) refers to the cost of production factors. He gives another explanation for determining the price through determination the price with supply , demand and benefit costs **(Mamouri, 2012.334)**.

Second, price policy has two concepts: first; the narrow concept which means a set of procedures and basis for the purpose of determining prices and influence in order to achieve prescribe economic and social objectives **(Central Bureau of rates, 1985.16) (Al Emadi, 2009.1)**.Second; the broad concept that price policy means all available means of direct and indirect influencing the price structure and its components (costs, profit margin, fees, direct taxes, subsidies, which would influence the level and automatic market forces . They determine prices and price relations between various goods linked considerations that are related to production and consumption **(Wasti, 2003.15)**, in order to achieve state policy and its programs in the economic development of the community..**(Central Bureau of rates, 1985.17) and (Alhadithi, 2007.14)**

Third, the factors affecting the price policy;

There are social, political and economic factors affecting the movement of prices. They vary according to the economic systems and the degree of development, as follows:

1) **Economic Factors :** they are; rate policy , the policy of income and wage policy.They can be applied to meet the basic citizens' needs. This price is suitable through the imposition of progressive prices(through application of laws) on high incomes and impose tariff duties on luxury goods. It can set a minimum wage and increase the salaries of employees in order to reduce the differences in income between citizens and raise the standard of living for them.
2) **Social Factors:** Whenever you have changed the nature and behavior and tastes and desires of the citizens and the greater the number of the population has increased in terms of age, sex, and increased migration from the countryside to the city, whenever affected by the volume of demand, which is reflected on the movement of prices.
3) **Political Factors:** Decision of political state could affect economic decisions about installing or fixing various basic price of commodities with attention to the level of wages and salaries for employees in order to provide a decent standard of living for all citizens without discrimination. **(Hakim, 2013.200).**

The second theme: Agricultural Price Policy, principles, objectives, importance, characteristics (features) and problems faced.

First: Agricultural Price Policy means all available direct and indirect ways influencing the price structure and its components (costs, profit margin, fees, direct taxes, subsidies, farm family effort), which is achieved through attention to the producer and consumer prices at the same time and in order to achieve social justice among citizens.

1) **According to the producer prices for the product to be(Alinad, 1990.56) and (Salman 1995.52) and (Ismail 1990.35).**
    a. **Announcement for pre-purchase** prices before the start of the growing season to stimulate the producer for growing planned product.
    b. **The purchase prices ensure the stability** of the agricultural production relations and linking the farmers to their land .
    c. **Linking the purchase prices** with the farmers income as a result of the development of the agricultural process in quantity and quality.

d. **Coordination between the purchase price** with the policy of investment and lending opportunities , the provision of production and the development of efficient performance with the establishment of an efficient marketing system secured the plant or animal products against risks and to achieve economic balance.
e. **Coordination between support the purchase** price of the final product and policy support purchase price of the production inputs and productivity requirements rate policy in order to increase production and achieve the accumulation capital.
f. **Determining the purchase price of agricultural** raw materials entering in the industry in the interest of the local industrial projects.
g. **Preparing classification** of agricultural commodities, according to a period of maturity, speed of damage, product quality when determining the price.
h. **Evaluation** production conditions and the extent of their efficiency to install the actual costs of the products and taking the average cost basis for building prices.

2) **According to the consumer prices** there must be: **(Hammadi 2006.10) and (Thuwaini, 1981.29).**
3) **Protection the stability** of the prices of wheat, barley and rice crop as strategic crops.
4) **Protection the consumer price** who is with low-income.
5) **Providing continuous supply** of products through intensification of local production or import. Under exceptional circumstances and where import is not possible, there must depend on increasing productivity and reduce the gap between production and consumption, and this is what happened in China since the fifties as the purchase price paid to producers remain united and always higher than the retail price.
6) **Classification of products by speed** of damage, the commercial margin and which are essential and other necessary in proportion to the economic plan for the country.
7) **Recognition between agricultural** commodities destined for direct human consumption and those destined for the industry as raw materials.

Second .Principles ofprice policy; They are: **(Ismail 1980.35) and (Central Bureau of rates, 1985.17) and (Salman 1995.52) and (Wasti 0.2003: 15). (And (Waeli 0.2004: 21)**

a. Planning of prices
b. Stability of prices.
c. United prices.
d. Continuous prices with development and growth.
e. Principles and rules for determining the prices are acceptable to the producer and the consumer at the same time.

Third.Aims of price policy .Theyare the following: **(Thuwaini, 1981.29) (Moses, 1998.85) and (Wasti, 2003.15) and (al-Awadi 0.2009, on the Internet) and ((Abu Shadi 2010.143)**

1) Achieving changes in agricultural production and cultivated area structure.
2) increasing production through stimulation and achieving attractive returns while taking the phenomenon of inflation to be reduced, because the price cannot be left to the market mechanism and the forces of supply and demand only.
3) Improving the distribution of income.
4) Necessary to provide local moderately priced food and reduce imports.
5) Linking the farmer with his land.
6) Determining the price of production requirements within relatively low levels.
7) Stability ofproduct prices and reducing their volatility.

8) Acheiving greater return from agricultural resources productivity through the balance between prices offered by the state for the prices of key commodities as a support and increasing profit margin of luxury goods.

Forth; Importance of agricultural price policy :it highlights through: **(Wasti 0.2003, 16) and (al-Bayati 2007.15**)

1) It is a tool to guide economic activities through the allocation of economic resources.
2) It is a tool to guide consumption and rationalized it.
3) It is a tool in the re-distribution of national income.
4) rationalization of import and orientation to the export.
5) The support of prices is important for achieving a balance between the forces of supply and demand..

Fifth: properties (attributes) of agricultural price policy in Iraq Prices of agricultural commodities in Iraq since 1940 until 2013 were characterized by the following features:(**Ministry of Planning and Development Cooperation 0.2009, on the Internet**)

1) Agricultural price policy did not holistic for all agricultural commodities.
2) To take care about selection of exported crops or food that are shopping by the government and left of other crops price for market forces, leading to uneven prices and yield and relatively low income for export crops producers and then turn them to the cultivation of agricultural crops unspecified government prices.
3) Fixation of crop prices and not only adjusted in a crisis situation, which leads to uneven domestic prices from world.
4) Some agricultural policies didnt take into account the actual production costs when determining prices.
5) Permanent attention towards supporting consumer prices by selecting low prices or prices for the benefit of the government to get the greatest return from export crops at the expense of the agricultural local product.
6) There is no guarantee for farmers when determining the prices, particularly in areas that rely rains in their planting.
7) The fixed price ,imposed by the government ,could be less than the sale price. As the government is not committed to buying in some cases regardless of the quantity of the crop.
8) Announsement the purchase price of the product at the start of grain crops harvest and not in the start of the planting season.
9) Real support directly is very important to cover losses resulting from the price difference between the import cost and the selling price to consumers.
10) Prices faces many difficulties, including the difficulty of obtaining accurate information on the costs and neglect of the demand side and focus on the supply side.

Sixth: Basis ofpricing agricultural commodities prices:

They are **:(Bandar, 1977.23)**

1) Pricing on the basis of equality of farmers' incomes with the citizens in other sectors of the national economy through the identification of agricultural products prices with level ,that leads to increase their income, and ensuring a minimum level of net income for the farmer by the state through determining the expected output quantities and estimating the price before the planting season through the relationship **(expected quantity * price = actual quantity * price)** with the need to exclude as much of the farmer consumed from quantity produced.

2) Pricing on the basis of the cost of production rate calculation (inputs costs + labor costs) for the period (3-5 years) in addition to the value of the work of the farmer with his family and that the price covers production costs and achieve a return rewarding farmers to continue production.
3) Pricing on the basis of the achievement of distributive justice among economic sectors through equal price to give the farmer purchasing power for his products itself (convergence between production costs and the costs of living farmers) such as a. Comparison between sale price of the agricultural product and purchase price of production inputs, b. the comparison between agricultural prices and the Industrial prices, c. the sale of agricultural commodities and the prices of consumer goods. d. comparison between the selling prices of agricultural products and the prices of goods and services used in the production and consumption which can calculate by the following equation:

   Price = (average of product price for the last ten years\ Average wholesale prices for the product for the last ten years) – (the actual price of the product for the base year) + (index for the wholesale price of the product to be priced now).

   Here we have to know the price indexes and the negligence of the volume of production (**Nassar, 1972.297**)

4) Pricing on the basis of production and distribution and the re-calculated, general level of prices, consumption and investment. It Is seen that prices of an integrated system, this method linking theory and practice by economic expert. It's one of the best ways because it takes price level together with the planned growth of agricultural production .

Seventh: The problems facing the agricultural price policy .It includes the following: **(Alinad, 1985.61) and (al-Bayati 2007.15)**

1) **Economic resources in Iraq**, are characterized by scarcity Climate(whether) is characterized by extreme temperature that arrives in the summer season to more than 50 oc in summer and fall to below zero in winter. Humidity and rain agribusiness meet the need in the north of Iraq and the climate of the desert and semi-desert and few rains in central and southern Iraq. In the north are grown grains and vegetables. In the middle grow most of agricultural crops. in the south are grow grain, dates and fruit. Constitute a desert region , the plains ,mountains , foothills area and the island as follow: 42.5%, 23.6%, 18.3% 9.6% and 6% of the total area of Iraq respectively. Irrigated land, which can be exploited 22.1 million donems*, but the cultivated areas continues to drop . Abandoned area is about 10 million donems will not be exploited because of the lack of irrigation water availability. **(Wasiti, 2003.25)** rain-fed land and 9.5 million acres divided into 1.5 million donems guaranteed rains, 2.5 million donems are almost guaranteed rains will not be exploited and 5.5 million donems of rain is not guaranteed. **(, The General Authority for the operation Irrigation projects .1993) and (Ministry of Agriculture and Irrigation 1990.9)(*donem =2500 m2)**
2) **The water resourses problem:** Amount of water contained to Iraq is 77 billion m3 per year during the eighties decreased to less than 30 billion m3 during the first decade of the first and the twentieth century by the Turkish , Iranian and Syrian policies through the establishment of many of dams and reservoirs .The wastes from the supply side due to lack of rain (less than 50% for fall) rates, and the demand side where the throw remnants of cities, industry and health from heavy water and harmful substances in the course of rivers in addition to what comes from polluted from upstream countries water. Also we are today with air pollution due to the use of banned weapons and thousands of tones of material explosive and razed large areas because of terrorism and the semi- destruction of infrastructure. **(UNESCO, the annual report.).**This led to the water contained pollution which

increased from only 250 ppm in the eighties of the last century to 3500 ppm after the US occupation. **(Said, 2006.57),**This increased production costs and the impact on productivity fell by 60%.

3) **Salinity of soil problem; It**constitute 73.9% of the total area in Iraq. It can divide to: arable land .3,9% soil too salty, middle salty 50.4% and 19.6% light salty. the amount of salt added to the soil after the evaporation of the bulk of irrigation water nearly 3 million tons a year, or nearly a quarter tons per donem \ year. **(Al ReemHawi, 2008.11).**The stop reclamation operations and since 2003 in addition to the salt and desertification, and accommodation random at the expense of agriculture, Iraq loses 100 000 acres annually from Farmland.
4) **Agrarian investing and financing problem** after 2003 despite the increase in investment allocations(public and private), because of poor organization and administrative corruption and the lack or weakness in the use of modern technology.
5) **The semi- destroyed infrastructure problem** ;Iraq's need for electricity increased by 15,000 megawatts and available only 10,000 MW, although the size of the big investment allocations for the period 2006-2012, most of the irrigation and drainage, dams, reservoirs and roads in rural projects have been destroyed almost completely as a result of military operations and poor maintenance and neglect of some, which led to rising agricultural production costs. The growth of the phenomenon of financial and administrative corruption after wars and the lack of clarity in the financial accounts for 13 years , the resulting structure of the Iraqi economy and inflation and unemployment imbalances.
6) **Problem of legal challenges**, including the lack of a number of laws, weakness or disable other laws as the law of competition and prevent monopoly, agricultural production Protection Act, Consumer Protection Act, the customs tariff law, export subsidies law, trademark law, the law of registration of companies and the laws of quality control**.(Arab Organization for Agricultural Development, 2000.8.)**
7) **Price volatility**: The follow-up to the movement of prices and since specified in Iraq sees the presence of sharp fluctuations in prices as a result of Iraq's dependence on import of raw materials from different origins of the most important Western origins suffering from inflation and price volatility, it, most of the problems transmitted through foreign trade channels to local commodity prices.
8) **problem of commercial margins**: Commercial margins are up to wholesalers and intermediaries between 5% and 90% of the value of the price and which reflect negatively on consumer income and on the movement of prices. What announce about the availability of commercial margins by agricultural facilities, is only a monopoly of the facility and not an improvement in the efficiency of production.
9) **problem of the purchase price of the product**. Announcement at the start of the harvest season and not at the start of the planting season, confuses the orientations of farmers and concerns about the cultivation of subsidized product. This would oblige them to leave the agriculture and land and to engage in other work outside agriculture more profitable.
10) **Government support problem**: Many countries move, in many cases, to assign locally produced goods, industrial or agricultural, which are costs through high customs taxes on imported goods for domestic or similar to the aid of goods exported to the invasion of foreign markets.**Types of government support** can be summarized according to the following:

- Support plant and animal production inputs prices. It means supporting the prices of fertilizers , tractors , harvesting combines, improved seeds and certified, especially for farmers of strategic grain crops, the distribution of pesticides to farmers at very low prices, distribution of nylon material, especially tomato-covered and subsidy peasants on the cost of agricultural mechanization. In addition to the provision of electricity in rural areas to help encourage farmers in the operation of generators and livestock development.

- Support the final product prices, especially agricultural strategy and industrial crops. Calculated the costs on the basis of ton adoption of a production medium per donem and as follows: Product cost of intermediate consumption (+ 10% reserve), wage costs of tractors and Harvest combines, amendment and settlement (mechanical processes) (+10% reserve), workers' wages (members, including wages of family members) , wages of the land and irrigation and administrative procedures. It combines these costs and augmented by margin. district between 25% and 50% of the total costs. He supports the final product and protect it from deterioration of prices in the parallel market. **(Hakim 2013.200)**.

  The process of support is a positive process in the provision of production inputs and increase the stimulation of production, thereby increasing farmers' income, but this policy has a lot of negatives, including: the reluctance of farmers from planting crops supported by the state such as grain and industrial crops and orientation towards other crops as vegetables that earn high profit in a short time because of poor follow-up and non-implementation of agricultural production Protection Act. On the other hand, Iraqi soil fertility varies, where the lack of geological survey periodically spaces planted , distributed or leased to farmers and different degrees of fertility and very good, or not economically feasible or Lands with zero rent or differences in irrigation methods.
- Government support for research centers and the application of sciences and technology in the field of production within high quality and hybrids plant and varieties types that bear unsuitable conditions, animal production and the development of animal, in the field of genetic engineering such as plant tissue culture and genetic transfer, and in the field of automation and laser leveling, in the field of agricultural industrial- agricultural projects extension.
- Support policy of allocated food and consumer goods from the Treasury subsidy.
- Support policy of exchange rates and taxes to bear the state proportion of foreign currency to finance imports for the private sector operations .
- Support policy for the sale of goods at discounted prices of consumer goods and intermediate or produced by public sector companies, the lowest price ofimported goods.

The third theme \ Evaluate the prices and the agricultural price policy within different time phases:

First, **Evaluate prices and price policywithinRoyal Governmentfor the period 1943-1957**

We must study the reality of the agricultural sector(the ingredients) then to evaluate of prices and price policy, as follows:

1) There is underdevelopment in agriculture and controlling of the owners on lands and agri. production with traditional styles , a reduction in the use of technology ,the lack of agricultural extension and lack of access to agricultural research for the use of modern technology, non-use of improved seeds and chemical fertilizer and total agricultural output in real terms It is 32.3% of national income in 1953 **(KheriAldeen Haseeb.1965 3) (Arab Monetary Fund, 1984.34.)**
2) Areas cultivated ,productivity and production of grain crops;

   Wheat area increased to 4.3 million donems to the average period 1950-1954 and the productivity was158 kg \ donem and with production 699 353 tons .Barley areas increased to 4 million donems and productivity of 233 kg \ donem with production 927 594 tons. Rice areas increased to 454 266 donems and productivity of 368 kg \donem with production of 230 503 tons for the same time. **(Aldahri 1972.395)**

To evaluate prices and price policy in this stage ,we explain the following: despite the enactment of Law 41 of 1943 foe determination prices of strategic crops like wheat, barley and rice, but there are no pricing policy

in the true sense. Prices have been characterized by vacillation, instability and under the control of brokers and owners and retailer

Second, Evaluation prices and price policy within Republic Government for the period 1958 -1979

In order to evaluate prices and price policy in Iraq during this phase despite the issuance of Agrarian Reform Law 30 of 1958 and agricultural production ,there must clarify the following:

1) Force power constitutes 51% of the total workforce in 1965 it rose to 55.4% in 1970. Iraqi per capita income is 40-70 dinars and income peasant family 30-50 dinars annually **(Al-Attiyah, 1964.6).**Changes in agricultural income ratio declined from 22.6% of national income in 1970 to 9.9% in 1975 and to 9.5% in 1979 **(Public Authority for Agricultural Cooperation and Guidance, Department of Statistics 1980)**
2) Finance agri. specializations within the investment plan increased by 1977 doubled compared with 1975 and is equal to one third of the allocations for the industrial sector for the same period. **(Ministry of Planning, 1977)**
3) The number of tractors and combine harvesters and pumps used in the agricultural sector in1972was 879 tractors,236 harvester ,522 pump .
4) 4. Providing loans to farmers ;It increased from 1.7 million dinars in 1965 to 7.5 million dinars in 1975. Repayment rate of these loans does not exceed 46% for the year 1969. The relative importance of loans granted to agricultural equipment to farmers dropped from 47.9% in 1969 due to increased acreage and the growing demand to 42.7% in 1974 . The loans granted to farmers for the purchase of mechanization increased from 14.3 % in 1968 to 18.8% in 1974 because of the tendency to rely on farm mechanization of drawers and harvesters and pumps and the lack of agricultural labor in addition to the increase of cultivated wheat and barley and rice for this term spaces
5) Agriculcural supplying such as chemical fertilizers, pesticides, and improved seeds, as an important factor for increasing of agricultural production, was on the rise. The studies proved to increase agricultural production by 50-55% requirement of the use of mechanization and irrigation technologies, pesticides and improved seeds .Interest of the use of fertilizers started in the fifties by relying on imports.
6) Areas cultivated ,productivity and production of grain crops.
7) Wheat area was was 4.8 million in 1972,productivity was 222 kg \ donem while the production was 1.2million tons .Barley areas was 4.3 million donem and productivity of 186 kg \ donem with production was 832 666 tons .Rice areas was 490 100 donem and productivity 461 kg \ donem with production 230 503 tons for the same period,for the support of inputs grain crop production prices. **(Aldahri 1972.395.)**
8) The relative importance of the agrarian sector at fixed price for 1980 decreased from 34.6% in 1970 to 20% in 1975 .The average compound growth rate of agricultural sector for the period 1964 to 1974 at constant prices of 1969 are down from 4.5% to 0.8% **(Central of Statistics, 1964-1974)**.This demonstrates the existence of bottlenecks in this vital sector, where non- complementary availability of capital and the lack of sufficient experience and competence in the work and the scarcity and lack of social capital factors. And the effects of inflation are clear on prices. The food gap for the period 1970-1972 was 473 000 tones and self-sufficiency ratio is 86%. **(Central Bureau of Statistics (NBS) \ Department of National Accounts**).

To evaluate prices and price policy in this phase recording the following: there is a tendency to relative stability in prices for Msthlk.kma and led support policy to protect agricultural products and increase and stimulate his income to increase production. At the same time, there are consumer protection for the weak pressure brokers and lenders to control the prices and this led to the presence of relatively stable agricultural market. We have influenced determine agricultural prices on agricultural incomes and on the field price and the reduced prices imply for the period 1974 to 1980 policy were, respectively, 20.8%, 15.1% and 16.4%, and its impact on agricultural production for the same period was only 3.2%, which is a small percentage in terms of increasing the cultivated area by 1%. However the positives of this price policy, but there are a set of negatives that accompanied the policy, namely :

- The direction of most of the farmers to grow fruits and vegetables.
- Non-discrimination and consumer of locally produced goods and imported goods in the market other than the meat.
- There are some sellers of single imposes rare commodity when selling subsidized goods.
- The farmers were directed to non-interference of fruits and vegetables, which was founded in 1975 to purchase goods in the case of non-subsidized sale of goods or lower prices in times of broad interest displayed, increasing the profitability of retailer on the product, as well as the expense of the farmer and consumer.
- The existence of agreements between the retailer and that their numbers in a few big cities to influence the producer and the consumer price at the same time, especially fruits and vegetables.

Third: Evaluation prices and price policy within Republic Government within ;crises Iraqi-Iranian War and Economic Blocked for the period 1979- 2002:

1) 1.Because of big amount of money expended for the continuity of war since 1980 till 1987 ,grain crops prices were rising gradually especially after 1983.This impact was clear for shortage of financial abilities, limiting amounts of import crops, shortage of foreign currency and weakness of control.
2) Force power: dropped from 55% of the total workforce in 1973 to 21% in 1993, meaning the functioning of one versus three for not working despite the availability of land, water and labor because of the war and the economic blockade**. (Food and Agriculture Organization, Yearbook, 1994).**
3) Providing loans to farmers: the relative importance of loans granted to agricultural equipment to farmers dropped from 42.7% in 1974 to 33.4% in 1986.The rate of repayment of these loans does not exceed 61% of 1986 ,so as to double the follow-up concerning loans granted to farmers for the purchase of mechanization decreased from 18.8% in 1974. Then loans fell to 9% in 1986, because of the tendency farms to rely on mechanization of drawers and harvesters and pumps and the lack of agricultural labor in addition to the increase of cultivated wheat and barley and rice for this period spaces.
4) The technological progress; The number of tractors ,combine harvesters and pumps used in the agricultural sector increased from 879 dragline 0.236 harvester 522 pump 1972 to 37161 tractors 3327 harvester and 49 150 pump in 1993 (Ministry of Agriculture, statistics for the period 1990 to 1994), and despite the increase in space control with chemical pesticides by 60 % in 1975 and to 68% in 1993 **(Ministry of Agriculture, the Department of Plant Protection 1994)**
5) The relative importance to the agricultural sector at constant prices of 1980 from 20% in 1975 to 11.7% in 1980 and dropped to 15.5% in 1985 and to 13.3% in 1988 **(Ministry of Planning, the Department of National Accounts, Group Annual Statistical for the period 1970-1988).**Total agricultural output at constant prices of 1975 is 50% of national income in 1979 fell to 30% in 1983 **(Kher Al-din Haseeb 1965, 0.4) (Arab Monetary Fund, 1984.34)**

6) Added-value of agrarian production decreased from 18.6% in 1974 to 17.7% in 1984. One result was that the increased food security gap from the wheat crop of 110% in 1970(that means more of self-sufficiency) to 48% in 1980 and to 29% in 1988 and then increased to 54% in 1990 (deficit).). Rice (from 79% to 20% and to 12% and to 25%) for the same period. **(Abrahim, 1999.231)**Food gap increased of up to 1.5 million tones for the period 1979-1981 and self-sufficiency by the amount of 54.2%. **(Alinnad,1981, p. 32.)**Value added in the agricultural sector fixed 1975 prices for the period 1974-1984 from 20.6% of GDP in 1974 without oil to 8.6% in 1984 at constant prices of 1980 increased from 7.7% in 1974 to 10.6% in 1984 and to 9.9% for the period 1986-1988. **(Ministry of Planning, 1985)**. .Falling the percentage contribution of the agricultural sector in gross fixed capital formation after 1980 is due mainly to the existence of collective farms and state farms just do not get the economic feasibility criteria and did not achieve economic results justify the significance and the importance of continuity. **(Ministry of Planning, agricultural planning body \ evolution of the contribution of the agricultural sector in the 1970-1982 national income in 1985 Table 3:00 15)**. As a result, low commodity trade balance of more than 1979 doubled to more than six times in 1985 and to more than seven times 1988 in terms of increased imports and the absence of exports .Cereal crops drop back for many reasons, including:

   a. reduce the acreage of grain crops because of the behavior of the upstream countries downwards imports Euphrates River water to 34% and reduce imports of the Tigris River to 18%.So the salinity of the waters increased of the Euphrates in the city of Samawah(south of Iraq) to 3500 ppm.
   b. low levels in the techniques used.
   c. low awareness among citizens of the importance of water and the use of excessive and irrational in irrigating agricultural land.
   d. increasing population and increasing demand for commodities strategy.
   e. semi-destroyed in agricultural infrastructure, where the deterioration of irrigation projects by the military operations and the lack of electrical power to run the projects.
   f. Iraq will associate in membership the WTO(World Trade Organization) .This will create strong competition to the possibility of entry of agricultural commodities to the Iraqi market, without being subject to the limitations and Tariff .Here we have to improve the quality of production for the purpose of increasing the rival foreign goods.
   g. wheat prices in 1964 is 34 dinars and differences in price in months the year is 30%, barley 18 dinars and price differences of up to 40% during the season and rice 100 dinars and price differences during the season up to 29% (**Sanussi 1965.21)**

Because of the Iran-Iraq war from 1980 until 1987 drained Iraq large sums of money, which led to the lifting of agricultural commodity prices gradually despite the attention of agricultural machines determine a reasonable level. This effect was evident after 1983, due to declining financial possibilities, reducing the imported quantities of agricultural commodities, decreasing hard currency and weak controls on prices and thus doubled the number of agricultural commodities prices standard for total production of cereal crops (1974-1976 = 100) remained fluctuating between 107% in 1974 and 82.6% in 1979 and 96.9% in 1983 while the figures standard of consumer prices at constant prices of 1979 was 164.4% in 1982, increased to 186.5 in 1983 and the amount of 13.4% **(Group statistical 1983.144).**Consumer food prices in 1993 rose by doubled compared with the year 1992. The record indicated that agricultural output had risen to 982% in 1992 at constant prices of 1980 after it was 908% in 1988 **(statistical group, 1993.189)**.. agricultural commodities have remained specific, barley, rice, setting minimum prices for agricultural commodities such as corn, dates, lentils, chickpeas, cotton, leather, Tobacco, Sesame, Sunflower and wool with a note that he could product that sells its products above when there is a higher price ..

After the economic blocked in 1990 (oil for food), the were many changes and impacts of agrarian crops prices.Ingredients ofagrarian production are as below;

1. Population has grown 19 478 million in 1993 to 26 million in 2002 and an annual growth rate of 3%, which is high in the standard. Agricultural workforce of 1990 rose from 131% to 208% in 2002 for feasibility work in the agricultural sector to the circumstances of the war and the siege general economic 1990.In spite of this increase there is a lack of knowledge of modern technology and methods of production and lack of knowledge of scientific methods which impact on the level **(Mona Rahma, 2000.162).**
2. Financial resources: increased financial allocations to the agricultural sector more than seventeen times in 2002 compared with 1993 within the investment budget for the period 1993-2002 were not financial allocations and loans obstacle to development required but commercial purposes more than it is a service **(Ministry of Planning, Statistical booklet of the key financial indicators for the period 1993-2013).**These allocations represent the agricultural sector to absorb the additional investment, but limited the ability of the agricultural sector in this regard and mismanagement and corruption quotient did not materialize agricultural development responds to the aspirations of the Iraqi community in the provision of food commodities locally
3. Water Resources in Iraq come from two rivers Tigris and Euphrates. Water imports of 12.37 billion m3 declined in the Euphrates River and 66.36 billion m3 in the Tigris River in 1993 to 10.67 billion m3 in the Euphrates River and 42.98 billion m3 in the Tigris River in 2002, respectively.
4. Technological progress: an increasing number of tractors and combine harvesters, pumps and water systems used for agricultural production in quantity and quality in 2002 compared with 1993 as follows: harvesters 6079 increased more than time and a half, Catchers 63 056 increased by half due to the conclusion of a commercial contract with Algeria in 1995 and because of Iraq Agreement with the United Nations oil-for-food, increased by 93 482 pumps weakness, irrigation systems, 3141 after it was non-existent. . **(Central Bureau of Statistics and Information Technology \ annual Statistical Abstract for the period 1993-2000).**
5. Agricultural supplies as an important factor in the increase of agricultural production, was in constant decrease. decreased amounts of chemical 1.089 million tons of fertilizers in 1993 by 42% compared with 2002 (Ministry of Agriculture, 2002, p. 50) Using the pesticides in the fight against diseases and insects on crops strategic decreased from 9.3 million donem in 1993 to 7.6 million donems in 2002, and by 12%. (**annual Statistical Abstract for the period 1993-2002).**
6. Areas, productivity and production of cereal crops were: wheat area has increased from 4.7 million donems and productivity of 192 kg \ donem to become the production 0.9 million tons in 1993 to 6.6 million donem and productivity of 393 kg \donem and production of 2.6 million tons in 2002.Barley area: It was 6.3 million donem , productivity of 154 kg \ donem to become a production of 1.8 million tons in 1993 , decreased to 3.9 million donem and productivity of 210 kg \ donem and production of 2.8 million tons in 2002. Rice area of 519 000 donem and productivity of 505 kg \ donem to become the production 262 000 tons in 1993, decreased to 216 000 donem and productivity of 194 kg \ donem and production 194 000 tones in 2002.The reason is falling in water supply and minimizing the imports.
7. Agrarian production index (1980=100) indicates to rise from 908% in 1988 to 982% in 1992 (Annual Statistical for the period 1988-1993 ,189)..The relative importance to the agricultural sector at constant prices of 1980 from 20% in 1975 to 11.7% in 1980 and dropped to 15.5% in 1985 and to 13.3% in 1988 (Ministry of Planning, the Department of National Accounts, Group Annual Statistical for the period 1970-1988). Total agricultural output at constant prices of 1975 is 50% of national

income in 1979 fell to 30% in 1983 **(Kher Al-din Haseeb 1965, 0.4) (Arab Monetary Fund, 1984.34).**

8. Consumer price index (1979=100) was 164,4% in 1982 ,increased to 186,5% in 1983.The change rate was 13,4% in 1983 compared with 1982(Annual Statistical ,1983,133).The index of consumer price for food was increased twice in 1993 in comparison with 1992. And the prices of cereal crops stayed limited.

To support agricultural production inputs, especially for agrarian crops it is a clear policy with agricultural supply,loans and mechanism ,for the period 1993-2002 and proof of this is that the average purchase price of a ton of wheat from farmers is 112.5 thousand dinars (ranging between 35 000 dinars \ t in 1993 and 270 000 dinars \ tons in 2002), was one sixth of the purchase price for the period (2004-2013), for barley 62 000 dinars \ tons (ranging between 15 000 dinars \ tons in 1993 and 105 000 dinars \ tons in 2002, which is close to five price. The price of a ton of rice is 171 000 dinars \ tons (ranging between 165 000 dinars \ tons in 1993 and 750 000 dinars \ tons in 2002 was equivalent to one-sixth of purchase price (2004-2013). **(Ministry of Agriculture, the Committee on the pricing of the purchase of strategic crops for the period (1993 -2013).**

Fourth: Evaluation the prices and price policy withinDemocratic Government and Occupation for the period 2004 -2013

Economic resources, production and productivity of crops after the US occupation of Iraq in 2003 include the following:

1) Water resources;. Water imports of 20.54 billion m3 in the Euphrates River and 45.51 billion m3 in the Tigris River in 2004 fell to 12.2 billion m3 and 34.2 billion m3 respectively in 2013 **(Ministry of Water Resources 0.2013 studies unpublished**).
2) Financial resources: financial allocations to the agricultural sector increased 3.5 times in 2013 compared with 2004 within the investment budget for the period 2004-2013 .The goals of the bank had become a commercial rather than a service in addition to the failure of strategic vision and clear policy to develop the sector and raise its efficiency **(Ministry of Planning „ booklet statistician of the key financial indicators for the period 1993-2013)**
3) Technological development: it is the greatest common denominator of the various economic development processes and in the forefront of agricultural development and agricultural mechanization. (Mustafa Fadhil Jawad Dahash, 2007, p. 187). Number of tractors and combine harvesters, pumps and water systems sprinkler and drip in 2013 compared with 2002 as follows: harvesters 5300 decreased by 14%, Tractors 75 534 increased by 18%, 135636 Pumps increased by 80%, while 140 488 irrigation systems increased by 6 times , 241 irrigation system in 2005 and 1591 system in 2006. **(annual Statistical Abstract for the period 2004-2013).**
4) This increase in the preparation of tractors and combine harvesters, pumps, systems of irrigation were the result of the agricultural initiative for agricultural lending in 2008. Irrigation system is very important, according to the scientific research, leads to increase agricultural production after the availability of other production requirements by 80-90%, and the consumption amount of water less by 30-50 % of the necessary surface irrigation and reduce the energy used by 70% and secure drinking water and industrial water needs **(al-Qaisi 2004.45)**
5) Areas, productivity and production of cereal crops for the period 2004-2013as follow; wheat crop; The area decreased from 6.1 million donems (donem=2500 m2)in 2004 to 6.0 million donems in 2014 , productivity increased from 298 kg \ donem to become 345 kg \ donem and production increased from1.8 million tons to3 million tons .Barly crop :the area decreased from 3.8 million donem to3.6 million donem, productivity increased from177 kg \ donem to 330 kg \donem and production

increased from 0.8 million tons 1.2 million tones .Rice crop ;the area decreased from 351 000 donems to 350 000 donems, productivity increased from 702 kg \ donem to847 kg \ donem and the production increased from 250 000 tones 289 000 tones for the same period.

6) Agricultural supplies:
chemical fertilizers decreased from 817 000 tones in 2004 to 239 000 tones in 2013. (**Annual Statistical Abstract for the period 2004-2013).**The deficit in the amount of fertilizer peaked and do not meet the needs of more than 15% because of reduced state support for higher prices **(Khalaf, a special Scientific Conference V at 15 \ 10 \ 2014), 10),**The reasons of failure of domestic production to meet the need for agricultural land are; shortage in chemical fertilizers, the inability of the State to promote the fertilizer produced by imports, non-arrival of fertilizer at planting time in September and in February, and claim that the fertilizer go hand terrorists. **(Abdul Qadir and Rafid Abdul Karim Hussain, 2001.94)**.2.Use of pesticides to protect the grain crop from diseases and insects decreased from 6.8 million donems in 2002 to 4 million donems in 2013 and by 42% and 70% respectively,The shortage dues to prevent the occupation of the Anti-orchards, aviation and agricultural aircraft to combat land cultivated. **(Annual Statistical Abstract for the period 2002 -2013)**.The real reseons behind this decline are:

a. Weakness the financial, technical and technological and information possibilitiesof farmers, wages of tillage had increased of 2,000 dinars \ hour for the period 2000-2002 to more than 12 times for the period 2011-2013 ,transport wages of 10,000 dinars per ton to more than 4 times, wages of labor from 1000 dinars to more of 24 time and liter of kerosene from 5 dinars\ liter to 1,000 dinars\liter. The price of one ton of urea fertilizer had increased of 60 000 Dinar to more than 10 times .Compound fertilizer price increased from 100 000 dinars to more than 9 times .Price of pesticides which increased from 2,000 Iraqi dinars per liter for the period 2000-2002 to more than 11 times for the period 2011-2013. **(Khalaf, a special scientific conference in 15 \ 10 \ 2014.10)**
b. lack of ability of the farmer to buy pesticides for large rise in prices,
c. Weak in government support to control operations,
d. Control of the private sector in import the pesticides and selling prices are too high.
e. lack of competitive agricultural crops against imported products.

The final product support policy and the policy of support of agricultural inputs within this stage can be seen as follows:

1) Support the final product prices policy, especially grain crops is clear policy for the period 2004-2013 and proof of this is that the averagepurchase price of of Wheat from farmers is 607700 dinars (ranged between 270 000 dinars \ ton in 2004 and 792 000 dinars \ ton in 2013,this is equal to double of the purchase price for the period 1993-2002,The averagepurchase price for Barley is(412900 thousand dinars \ tons (ranging between 110 000 dinars \ ton in 2004 and 572 000 dinars \ ton 2013 which is close to 5 times the price. The averagepurchaseprice of Rice is (705 000 dinars \ ton (ranging between 450 Alfdanar \ ton in 2004 and 750 000 dinars \ ton in 2013 and equivalent to six times the price for the period1993-2002. **(Ministry of Agriculture, the Committee on the pricing of the purchase of strategic crops for the period 1993-201**a policy to.
2) Support policy of the production inputs prices which includes:

- Support Prices of fertilizer sold to farmers(**the Ministry of Agriculture, Agricultural Equipment Co. for the period 2004- 2010) and (the Ministry of Agriculture, Department of Fertilizers 2011-2013).**
  As urea fertilizer and superphosphate compound fertilizer sold to farmers at half the purchase value or much less than in 2004. This support began to change over the years and even in 2013, where fertilizers are sold by 60% or more of the purchase value.

- Support the sale prices of tractors and harvesting combines and at rates ranging between 40-80% of the purchase price.

Conclusions

1) There were many determinations as a result of non-application of pricing policy that protects the producer and the consumer through a period of research because of the multiplicity of agricultural pricing Centers (Central Bureau of prices, the Commission for Agricultural Products Pricing in the Ministry of Agriculture, Marketing establishment of fruits and vegetables and the Authority of marketing dates).This will lead to price volatility and increased commercial margins.final damager is the consumer.
2) When there was no a strong relationship between the index of consumer price and the index of agricultural production, this will lead to get inflation .This happenes because of the price policy deficit within the various stages in the research, specifically the second phase, third and fourth in finding a balance between production and income and the prices of the field and the prices of discount goods implicitly and cultivated areas and the use of modern technologies and consumption.
3) There were no determinations for purchase price of high-quality strategic grain prices to stimulate product to be grown at the same time buy their output more easily by the consumer, because the continuous increase in population numbers and growth rate of 3.8% and the index for prices are much annual increase agricultural production 3.2 % .this is a negative case.
4) There is no control over agricultural production and there is no follow-up support, in optimal level, the production inputs and outputs. This can treat by implementation of leasing law to specialists graduates of agricultural colleges who are within the area Agricultural. There should be agricultural extension and agricultural research institution to take the role to stabilize the pricing and achieving success price policy for the producers and consumers.
5) There are many determinants of prices and price policy facing them .They are:

- Agricultural backwardness and weakness of production and productivity due to the slowdown in the use of agricultural technology of seeds, fertilizers, pesticides and mechanization and lack of agricultural research and extension, the semi-complete destruction of infrastructure and the lack of evaluation of the prices and price policy.
- Failure to resolve the political waters between Iraq and the riparian countries with a problem of Syria, Turkey and Iran, because it will address the problem of the lack of irrigation water for increasing the agri. Areas ,productivity and production.
- problem of increasing salinity and lack of comprehensiveness of agricultural price policy for all agricultural commodities.
- Fixation the crop prices and not adjusted except in crisis, leading to uneven domestic products prices from world.
- Non-observance of some agricultural policies to actual production costs when determining prices.
- Permanent trend towards supporting consumer prices .Select low prices or prices for the benefit of the government to get the greatest return from export crops at the expense of the agricultural local product.
- There in no a guarantee to farmers when determining the pricing policy, particularly in areas that rely on the planting rains.
- For the cereal crops the fixed price imposed by the government could be less than the sale price. As the government is not committed to buying in some cases regardless of the quantity of the crop.
- Announcement of the purchase price of the product at the start of the harvest season and not at the start of the planting season.
- State bears direct real support to cover losses resulting from the price difference between the import cost and the selling price to consumers.

6) Pricing is facing many difficulties, including the difficulty of obtaining accurate information on the costs and neglect of the demand side and focus on the supply side and therefore price fluctuations as a result of Iraq's dependence on import of raw materials from different origins of the most important Western origins suffering from inflation and price volatility, between 5% and 90% of the value of the price, which reflects negatively on consumer income and on the movement of prices.

The support of the production inputs policy during the second phase, third and fourth more effective than your activity the final product support policy because the lack of supervision.

Recommendations

1) Reform the structure of the Iraqi economy and the rehabilitation of the infrastructure such as electricity , irrigation projects and puncture and roads.
2) Grain crops (food)is very important for citizen living being This must lead to be concerted all sides responsible on the receipt of crop harvested (Ministry of Commerce, Ministry of Agriculture) and respect for delivery amounts transferred products from the farmers to the Cereal collection and the payment of their amount yet ,if no, this means it is a part of the state of administrative and financial corruption .
3) Act with the binding laws for farmers and businesses to fulfill their role in the implementation of the development process of agricultural production such as Agri .production Protection Act, customs tariff law, companies registration Act ..etc..
4) Activation the role of the Ministry of Industry and Minerals in supplying what Ministry of agriculture need from chemical fertilizers for agricultural intensification and raise productivity instead of import.
5) Determination the bank who lends farmers and agricultural companies the necessary loans for increasing productivity and achieving self-sufficiency of food.
6) Solve the problem of water among riparian countries Turkey, Iran and Syria , in order to provide water for drinking , agriculture and industry.
7) Falling the prices of oil derivatives that increase production costs, as well as other fertilizers and mechanization and seed .

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