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Highlights

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Discovering Thoughts, Inventing Future

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Contents of the Issue

i. Copyright Notice
ii. Editorial Board Members
iii. Chief Author and Dean
iv. Contents of the Issue

1. The Amajiri Schools and National Security: A Critical Analysis and Social Development Implication. *1-5*
2. Future Considerations for Developing Energy Efficient Economy in Ukraine using Light Emitting Diode (LED) Enginery on the basis of NBIC-Technologies. *7-16*
3. Classification Des Secteurs Créateurs D'emplois Au Maroc : Analyse Du Multiplicateur D'emploi Par Le Modèle Input-Output. *17-28*
4. Land Area Limitation of Durres Port Containers Terminal. *29-34*

v. Fellows and Auxiliary Memberships
vi. Process of Submission of Research Paper
vii. Preferred Author Guidelines
viii. Index

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The Amajiri Schools and National Security: A Critical Analysis and Social Development Implication

By Asogwa Ikechukwu Sebastine & Asogwa Dominic Obeta

Nigeria Immigration Service Enugu University, Nigeria

Concept of Amajiri School - The word Amajiri was derived from Arabic "Almuhajiri" meaning an emigrant. It usually refers to a person who migrates from luxury of his home to other place or to a popular teacher in the quest for Islamic knowledge. It is hinged on the Islamic concept of migration which is widely practiced especially when acquisition of knowledge at home is either inconvenient or insufficient. During the pre-colonial era, the Almajiri education systems originally called the Tsangaya was established under the Kanem-Borno Empire, one of the oldest ruling empire in the world extending from the frontier of northern Libya. It was established as an organized and comprehensive system of education for learning Islamic principles, values, jurisprudence and theology. This depicts the replica of Islamic learning centers in many Muslim countries such as: Madrasah in Pakistan, Malaysia Egypt and Indonesia etc.

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The Amajiri Schools and National Security: A Critical Analysis and Social Development Implication

Asogwa Ikechukwu Sebastine [α] & Asogwa Dominic Obeta [σ]

I. Concept of Amajiri School

The word Amajiri was derived from Arabic "Almuhajiri" meaning an emigrant. It usually refers to a person who migrates from luxury of his home to other place or to a popular teacher in the quest for Islamic knowledge. It is hinged on the Islamic concept of migration which is widely practiced especially when acquisition of knowledge at home is either inconvenient or insufficient. During the pre-colonial era, the Almajiri education systems originally called the Tsangaya was established under the Kanem-Borno Empire, one of the oldest ruling empire in the world extending from the frontier of northern Libya. It was established as an organized and comprehensive system of education for learning Islamic principles, values, jurisprudence and theology. This depicts the replica of Islamic learning centers in many Muslim countries such as: Madrasah in Pakistan, Malaysia Egypt and Indonesia etc.

II. Amajiri School and Nigeria: Origin Traces

In 1904, the British invaded and colonized the northern Nigeria territories and took control of the state treasury. They killed and disposed those emirs who resisted the foreign rule, while those who were subjugated lost control of their territories and accepted their new roles as mere traditional ruler used only for the indirect rule. Although, the British refused to recognized the Almajiri school and leading to the abolishing its state funding. They argued that Almajiri were mere religion schools. Then, Boko meaning western education was introduced and funded instead. At the loss of support system thus collapsed like a pile card. The responsibility of the Almajiri was then taken over by the local scholars who deemed it a moral and religious duty to educate these pupils for the sake of Allah.

Abdulaodir (2003) quoted saying "The Almajiri system of education as practiced today in the northern Nigeria is a completely bastardized system compared to the form and condition under the system it was operating and its output during the pre-colonial period. It has been argued that Almajiri system was imported into Northern Nigeria from northern Africa. In Nigeria today, the Hausa use the word to refer to both a student and a beggar. The Almajiri system involved entrusting children into the care of "learned" person, a Mallam with whom or to whom they migrate to different settlements where it is assumed that a conducive learning environment for the study of the Holy Quaran exists. Some of these Almajiri students were at liberty to acquire vocations and occupational skills in between their Islamic lesson and so were involved in farming, fishing, well constructive masonry, production, trade, tailoring, small business etc (Okonkwo & Alhaji, 2014).

The efforts of the last president of Nigeria Goodluck Jonathan in an attempt to better the lot of the Almajiri(s) established almajiri schools where they will obtain western as well as Quaranic education so that they will be removed from the street. The inaugurated repackaged and rebranded almajiri schools in Gaji area of Sokoto state embraced the president commitment by his inauguration speech:-

> *"Come for the nation to build on the moral foundation of the traditional system by providing the almajiri with conventional knowledge and skills that will enable them to fulfill their creative and productive potential (Ellechiagu, 2012) (Hilda & Ibrahim 2014).*

III. Cnigeria National Security Review

Nigeria since the return to civil rule in 1999 has been battling with series of violent, crisis and agitations from various geo-political zones in the country (Ammadu et al 2015). These agitations pose serious threat to the National security. Nigeria is a rich nation but Nigerians are poor, many extremely so. Nigeria has suffered growing security, capacity and legitimacy gaps, demonstrated in the declining capacity of its institutions to deliver public goods, including security, transportation, water, medical care, power and education. The growing threats to national security could be attributable to bad governance, sustained economic hardship; rising inequality and social frustration are fostering the growth of radical extremist groups. Some of these groups could be regionally based as could be seen in Nigeria. Book Haram group

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(North), Biafran (South (East) Niger-Delta militant (south-south) etc. Although, these groups agitation could be analyzed in different ways of reasonability and goals but, the truth is that their actions poses threat to the National Security and regionally also, African and the world.

Just as stated by Anumudu et al (2015), concerning the National security today, what we thought was a joke, has today become a monster sending many innocent men and women into unpremeditated grave and that is the emergence of terrorism in Nigeria. This has created fear and loss of security sense in the polity.

The rise of National Insecurity cannot go without blame or source. The fall of Almajiri school could be one of the sources of violent actors in the north. There may be other sources or blames especially in other regions of Nigeria but for the sake of this paper, focus will be concentrated on the links of Almajiri school/system failure on National security.

IV. The Fall of Almajiri School and the Rise of National Insecurity: a Critical Analysis with Development Focus

The invading of the British into the region and the killing of most Emirs and others disposed could be a history but the effect may still with the current generation. The Emirs lost control of their territories and accepted their new roles, as mere traditional ruler. They also lost fundamental control of Almajiri school arguing that, they were religious schools. The British introduce "Karatun Boko" meaning western education.

Ekpo & Bello (2014), there is no doubt that education is the foundation of any development in every society. It is important to every individual and the society at large, as roasts are important to the growth and development of a tree. But the argument now is 'whether education thrive better when incorporated with the intrinsic of the people's culture of if when the people's culture is neglected?.

Almajiri education in Nigeria started in the olden days when the quest to acquire knowledge was prevalent, especially the Quaranic knowledge by the Muslims. Although, there were no laid down procedure or channels adopted in obtaining such, except the unconventional way of handing over wards to a supposedly teachers, known as (Mallam Yusha et al 2013). The Mallam now enlist the child and the teaching of religious scripture and way of life are indoctrinated into the young pupils. The feeding and accommodation of the pupils were also part of the teacher's responsibilities. And a single, Mallan could recruit, feed and accommodate hundreds of pupils.

Unlike in the days when Almajiri schools enjoy the support and funding of the states, to even keep and feed one hundred months is not easy and it seem impossible. The coming of the civilized life styles of the west started encroaching into the big-cities of the north, some of these mallams became allured to the greed for money and started migrating to other cities and towns with their pupils and subject them to the vagaries of the streets. The motive of Almajuri at formulation which are:-

i. To ensure that children read and recite the Quaran
ii. Children become fully inducted into Islamic moral values in all behavior.
iii. Children become as knowledgeable in Arabic language and basic Islamic sciences as a foundation for further studies.

All these motives and more were bastardized by the process and greed of the mallam.

The Mallams having no financial support resorted the pupils to begging and other menial jobs for survival. This puts the current population of the Almajiri at about 7 million as reported by National Council for the Welfare of Destitute (NCWD)

The predicaments of the Almajiri system, now made available manpower that could pose threat to the national security. It was easy for the mallam who take charge of feeding and accommodation to redirect the pupils for some insecurity acts. The abolishment of Almajiri system by the British in turn receive a revolt by the northern Islamic group now Boko Haram. Meaning western education is evil. This became the genesis of the insecurity in Nigeria. Nigeria as a multi ethnic country and with the fate of the helpless Almajiri situation in the hands of their mallams become easy for manipulation for political reasons, economic reasons etc.

Book Haram as described is a militant group in North Eastern Nigeria which means Sunni Group for preaching and Jihad. The group was founded in 2012, largely to preach an Islamist ideology asked on the doctrine of the Taliban as well as groups such as al-Qaedi. The aim of the group basically is to create an Islamic state and to achieve its anti-western education target by stopping all regular schools. However, in Nigeria, cases of domestic terrorism are on the increase result to general insecurity and fear with Nigerian seemingly helpless in tackling the manual headstrong. There are indication that Nigeria could be attributed to a weak and failed state thereby joining states like Somalia Afghanistan, Pakistan, Yemen, Sudan and Iraq in this category and thus seen as states providing heavens for terrorist operations.

V. The Influence of Almajiri School on National Security Factor

Almajiri school could be a labour or manpower mobilization center for some National security threat factors. These threats to national security also militate against some social developmental factors such as:-

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poverty rate,literacy rate and population explosion Almajiri school failure mounts pressure on the factors that could lead to national security threats with social development implications.

a) Ahmajiri and Population Explosion

The existence of Almajiri school could be a factor that led to the misconception of the illiterate northern leading to indiscriminate marrying and fertility growth. The Almajiri school now serve as a place to dump young people as a relief to the burden in training the child.

b) Poverty rate and Almajiri school

The Almajiri falls among the categories of destitute children in Nigeria. The constituted seven million street begging, maladjusted, aggrieved and violent-ridden socio-neglects of Northern Nigeria (AHMED 2007).

According to Obioha and Adeforo (2009; nd), Almajiri school is predominantly in the Northern states of Nigeria. Likewise poverty rate in the Northern as stated is 71.4%, Northeast poverty rate is 69.1% and North central is 60.7°%. These respective poverty rates are higher than the other poverty rate of the other region.

Poverty report state that zonal precedence of poverty by different poverty measure as :- Table 1

Zone	Food poor	Absolute	Relatively poor	Dollar per day	States
North central	38.6	59.5	675	59.7	Benue, Kogi, Kwara, Nasarawa, Niger, Plateau FCT
North east	51.5	69.0	76.3	69/1	Adamawa, Bauchi, Borno, Bomber Taraba, Yobe
North west	51.8	70.0	77.7	70.4	Jigawa, Kaduna, Kano, Katsina, Kebbi and Sokoto Zamfara
South east	41.0	58.7	67.8	58.7	Enugu, Anamabra, Imo, Ebonyi, Abia
South west	25.4	49.8	59.1	50	Ekiti, Lagos, Ogun, Ondo, Osun, Oyo
South-south	25.5	55.9	63.8	56.1	Rivers, Cross River, Akwa-Ibom, Bayelsa

NBS 2012: Nigeria poverty Profile 2010.

From the statistics above, it can be observed that poverty incidence is high in the region/region that are predominated by Almajiri school target.

c) Literacy rate

Almajiri system of education is associated with Quranic education. In Northern Nigeria, Qur'anic school system predates western education in fact, in most parts of the Northern Nigeria, Qur'anic system predates even the Usman Danfodio Jihad (Sule, 2002).

Jaafar (2008) stated that the Almajiri system of education is the intellectual and moral training of pupils and students. The literacy outreach of Almajiri system is limited to ability to read and write Qur'aric only. Almajiri system as an alternative to westerner education increasea a half educated human forces. This could be explained more with the literacy rate of Northern states that showed to be poor relative to other region.

Table 2 : Adult literacy Rate in English by zones

Zones	Lit in English	Lit in any language
North central	56.4	61.9
North East	42.0	62.8
North West	31.7	70.1
South East	73.3	75.1
South-south	74.0	75.4
South west	69.1	77.9
National	57.9	71.6

VI. Insurgence and Region Dominated by Almajiri System

Book Haram as a militant group in North-eastern Nigeria aimed to create an Islamic state in Nigeria and achieve its anti-western education target by stopping all regular schools. The strength of Boko Haram group has grown as it is seen as providing jobs for the unemployment youth in the area of influence. Almajiri system failure and abuse by the Mallam could foster crime and violence by the Alajiri popular in cities like Kano and Kaduna. Almajiri has graduated into Yandaba, adolescent group. Also, in 2005, the national council for the welfare of the Destitute estimated there were seven million Almajiri children in Northern Nigeria.

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VII. The Paradox of Almajiri System , in Enhancing the National Security and Socio Development

Almajiri system in the Islamic religion has become a matter of sad concern for the North and the Nigeria nation. These children of almajiri school age and above roam about the street in tattered clothes begging, scavenging and doing all sort of odd jobs including clinica (Taiwo, 2013). A reformed almajiri system could lead to economics growth, attitudinal charge(morals) and education. In order to transform the Almajiri school program there are some steps to be taken.

VIII. Integration of Almajiri School into Ministry of Education

A call for abolishment of Almajiri school will be assumed as an encroachment into the culture and belief of the North. Therefore, Almajiri school could be reshaped to suit the social development goals of Nigeria. Such will also include the modeling of mode of enrollment and identifying indicators for assessment by the government agents or ministry.

Poverty targeting: Poverty should be targeted in the northern area using some empowerment programme. Agriculture could be an alternative to the empowerment since almajiri pupils could lead to increase in labour supply. A skilled acquisition could re channel the waste of labour to useful activities in the country.

Parental Enlightenment: The parents in the north should be enlightened to abide with the ideal of controlled fertility The ungodly increase in the fertility rate in the north should be campaigned against.

IX. Conclusion

Almajiri system should be transformed to suit socio development progress. This will help to reduce the possibility it serving as a mobilization center for security threat agents. The core value and objection of Almajiri School should be resuscitated. The spiritual and moral growth attain in almajiri school is well and capable of ensuring security in the nation. Therefore, in as much as, almajiri system could represent northern belief or culture; it should be transformed to avoid abuse of the vulnerable almajiri pupils to perpetuate violence in the nation.

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Future Considerations for Developing Energy Efficient Economy in Ukraine using Light Emitting Diode (LED) Enginery on the Basis of NBIC-Technologies

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Indexing terms/Keywords: *energy saving economy, energy efficiency light-diode hardware, NBIC-technologies, environmental pollution abatement.*

GJMBR - B Classification : *JEL Code : F00*



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Future Considerations for Developing Energy Efficient Economy in Ukraine using Light Emitting Diode (LED) Enginery on the basis of NBIC-Technologies

Matyushenko Igor [α], Goncharenko Nataliya [σ] & Michaylova Darina [ρ]

Abstract- The article deals with the prospective directions in creating energy efficient economy with using energy saving light-diode hardware on the basis of nano-bio-info-cogno- (NBIC) technologies. Ukraine experiences considerable import of fuel energy resources, which poses a threat to the state energy safety. The situation drives the need to implement a comprehensive research and design hardware to decrease production energy/output ratio, increase energy efficiency and diversify energy sources. At the same time implementation of energy saving hardware on the basis of NBIC-technologies into developed countries economies requires reviewing of the prospects for its utilization to develop light-diode enginery in Ukraine. The article aims at studying design and production trends for light diode lighting sources and systems on their basis using NBIC-technologies to achieve considerable costs decrease of electric power used for lighting, as well as quality increase and environmental pollution abatement. The main results of developing and implementing energy saving light-diode light sources and lighting systems on their basis in Ukraine are presented for the period 2009 – 2013.

Indexing Terms/Keywords: *energy saving economy, energy efficiency light-diode hardware, NBIC-technologies, environmental pollution abatement.*

Academic Discipline and Sub-Disciplines
Economics and Commerce, energy efficient economy

Subject Classification
National academy of sciences of Ukraine Classification

Type

Content analysis has been used as the main method of research, which allowed making a meaningful analysis of classic papers and researches of modern economists-practitioners devoted to the peculiarities of the modern prospects of creating energy efficient economy with using energy saving light-diode hardware on the basis of nano-bio-info-cogno- (NBIC) technologies.

I. Introduction

As of today, Ukraine experiences considerable import of fuel energy resources, which poses a threat to the state energy safety. The available outdated technologies stimulate "production wastage", provide for directive, but not market, pricing, stimulate inefficient work of power engineering companies and, especially important in this context, sectoral science declension. The situation drives the need to implement a comprehensive research and design hardware to decrease production energy/output ratio, increase energy efficiency and diversify energy sources. Ukrainian energy strategy till 2030 stipulates economy restructuring (first of all – decreasing GDP drop) at the expense of state reforms (e.g., public-private partnership in technological upgrading of enterprises, implementing a standardized auditing system, setting a state expertize in implementing renewable energy sources, etc.); structuring adjustment and technological remodeling of economy by the way of decommissioning worn out and outdated equipment, implementing innovative and investment projects; utilizing solar, wind, geo-thermal energy as well as biomass energy; implementing energy saving light diode hardware on the basis of super modern nano-bio-info-cogno- (NBIC) technologies.

The named problem was tackled by many renown scientists, including also M. Roco, W. Bainbridge, B. Tonn, G. Whitesides [1; 2], who studied the issues of knowledge, technologies and society convergence; L. Foster [3] worked with the issues of using nano-technologies for power engineering and energy efficiency enhancing; A.Kazantsev, V. Kisilev, D. Rubvalter, O. Rudenskiy [4], P. Maltsev [5], F.Rahman [6], together with Ukrainian scientists M. Kizim, I. Matyushenko, I. Buntov, O Khanova [7; 8; 9; 10] et.al. dealt with the development and prospects for NBIC-civilization. At the same time implementation of energy saving hardware on the basis of NBIC-technologies into

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developed countries economies requires reviewing of the prospects for its utilization to develop light-diode enginery in Ukraine.

The article aims at studying design and production trends for light diode lighting sources and systems on their basis using NBIC-technologies to achieve considerable costs decrease of electric power used for lighting, as well as quality increase and environmental pollution abatement.

II. Method/approach

Content analysis has been used as the main method of research, which allowed making a meaningful analysis of classic papers and researches of modern economists-practitioners devoted to the peculiarities of the modern prospects of energy saving hardware into developed countries economies requires reviewing of the prospects for its utilization to develop light-diode enginery in the World and Ukraine with using of NBIC-technologies.

General scientific methods make up a methodological foundation of the research. They include: description, comparison, statistics review, system analysis and others, which help characterize this phenomenon development in a more comprehensive way. We also apply the methods of dialectic cognition, structural analysis and logic principles that provide for making authentic conclusions as regards the investigated topic.

Official statistical data of the state institutions and international organizations, publications of reference character, analytical monographs, annual statistical bulletins, Ukrainian National Academy of Science reports as well as annual Ukrainian State Statistical Bureau reports serve as an information grounds for our research.

III. Results and Discussion

Normal or Body Text

a) *Program-targeted actions of the Ukrainian government on reducing of the energy intensity of gross domestic product and optimization of the structure of energy balance of the state in 2010 – 2015*

Sustainable development of modern civilization and the life quality of population is directly related to insufficient energy supply, which raises the urgent need to tackle the problems of resources depletion which are used with existing technologies. But namely the energy problems cause periodic global crises and stimulate the search of unconventional ways to meet the energy needs of any country in the world [1]. The analysis of events of the last decade leads to the conclusion that the world is approaching the global energy crisis. This is due to the limited proven and affordable stocks of organic hydrocarbons. Conclusions of all analytical centers are similar: oil and natural gas will last for 50 years, coal - for 100 years (data are divergent, but not dramatically). Through these forecasts is not expected reduction in cost of oil and gas to the level of the 80s of the last century through the redistribution of their flows, especially considering concomitant geopolitical conflicts. Criticality of gas problems could weaken shale gas, but this is unlikely to fundamentally change the situation, given the constantly growing demand for hydrocarbons [3; 7].

In order to reduce the energy intensity of gross domestic product and optimization of the structure of energy balance of Ukraine was adopted a Resolution of the Cabinet of Ministers of Ukraine No. 243 dated March 1, *"On approval of the State Target Economic programs of energy efficiency in 2010-2015"*. [11]. The aims of the Program are:

- Creating of conditions for approaching of energy intensity of gross domestic product of Ukraine to the level of developed countries and EU standards, reducing the level of energy intensity of gross domestic product during the term of the program by 20% compared to 2008 (3.3% annually), increase of efficiency of using the fuel and energy resources and enhancement the competitiveness of the national economy;
- optimization of the structure of the energy balance of the state in which the share of energy carriers produced from renewable energy sources and alternative fuels will be in 2015 at least 10%, by reducing the share of imported fossil organic types of energy resources, including natural gas, and their replacement by alternative types of energy resources, including secondary, provided appropriate financing of the Program.

For the implementation of the mentioned program there were 3 possible ways of solving problem.

The first method involves the development and implementation of individual sectoral and regional energy efficiency programs under the Cabinet of Ministers of Ukraine order No. 1567 dated December 17, 2008 *"About programs of energy efficiency and decrease of energy resources consumption"*. However, as practice shows, in the case when sectoral or regional program is not a part of relevant government program, it is impossible to achieve a significant reduction of the level of energy intensity of gross domestic product and optimization of the structure of energy balance of the state.

The second method involves the continuation of work on the implementation of the *Comprehensive State Energy Saving Program of Ukraine* and the State Program of support the development of alternative and renewable energy sources and small hydro and thermal energetics, which main tasks are the securement of the economy of traditional energy resources by a corresponding reduction of their consumption and the

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use of alternative and renewable energy sources. *The disadvantages* of the second method are: favoring the reduction of consumption of energy resources instead of increasing the efficiency of their use with simultaneous optimization of structure of energy balance of the state; imperfection of mechanism of control the implementation of these programs; the unresolved issue of optimizing the structure of energy balance of the state.

Third, the optimal method involves the development and implementation of *the State Target Economic energy efficiency program and development of energy carries production from renewable energy sources and alternative fuels for 2010-2015*. It will give the opportunity to create conditions for reducing the energy intensity of gross domestic product, optimization of the structure of energy balance of the state by increasing the use of renewable energy sources and alternative fuels, secondary energy resources, to introduce an effective mechanism of implementation the state policy in the field of energy efficiency, renewable energy and alternative fuels.

i. *Expected to solve the problem by the following way:*

- introduction of new production technologies and energy consumption, cogeneration technologies as well as technologies that involve the use of heat pumps, accumulation electric heater heating and hot water supply;
- use of solar energy and geothermal energy;
- excavation and use of natural gas (methane) of coal deposits and shale gas as alternative fuels;
- production and use of biofuels;
- development of wind energy, small hydro and bioenergy;
- modernization of gas transportation system, system of heat and water supply, heat power plants and combined heat and power plants;
- implementation of measures to reduce consumption of energy sources agencies held by the state budget;
- reduction of environmental pollution;
- legislative regulation of issues related to reducing the level of energy intensity of gross domestic product and optimization of the structure of energy balance of the state, adaptation of national legislation in the field of energy efficiency, energy saving and alternative energy to the European Union legislation;
- creating of favorable conditions for attracting domestic and foreign investment in energy efficiency and saving in order to optimize the structure of energy balance of the state, reducing emissions of polluting substances;
- formation of state monitoring system and control over the efficient use of energy resources, energy carries production from renewable energy sources and alternative fuels, sectoral and regional energy efficiency programs, improve the reliability of statistical information on energy performance;
- restructuring of companies which is aimed at reducing material and energy intensity of production;
- improving the mechanism of financing activities that require state support and aimed at reducing the energy intensity of gross domestic product, increase use of alternative energy sources and secondary energy resources, reduce emissions of polluting substances;
- enhance international cooperation in the framework of the implementation of state energy security strategy;
- popularization among the general public through the media the effectively and economical consumption of fuel and energy resources, inclusion of relevant issues to programs of educational institutions, creation of regional education centers to inform the public.

Term of implementation the Program is consistent with the stages of realization *the Energy Strategy of Ukraine till 2030* as the base document for energy efficiency and energy saving.

ii. *The main objectives of the Program are:*

improving legislation and standardization system in the field of energy efficiency, renewable energy and alternative fuels by:

development technical specifications and standards in the field of energy efficiency, renewable energy and alternative fuels;

- adaptation of national legislation in the field of energy efficiency, renewable energy and alternative fuels to the European Union;
- reduction of technological costs and non-energy losses due to modernization of equipment, introduction of modern energy efficient technologies, improving the system of state management and promoting energy efficiency, in particular by:
- renewal, upgrading energy-intensive industrial process equipment of enterprises;
- sanation of apartment houses, social facilities and building of institutions that are fully funded from the state budget, including development of project and estimate documentation;
- reorganization of social facilities that are fully funded from local budgets;
- development of model projects on upgrading and replacing boilers with their transfer to alternative fuels, installation of heat pumps, the introduction of technology of accumulation electric heater heating and hot water supply at the objects of communal ownership and social sphere, introduction of cogeneration technologies using alternative fuels in the field of communal heat power system;

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- to stimulate industrial enterprises to modernize boiler rooms, implement energy effectiveness equipment, technologies, materials and realization of related works by compensating part of the cost of projects;
- modernization and replacement of boilers with their transfer to alternative fuels projects with implementation technologies of heat pumps, accumulation electric heater heating and hot water supply at the objects of communal ownership and social sphere and introduction of cogeneration technologies using alternative fuels in the field of communal heat power system;
- modernization of gas transportation system, equipment for heat power plants, combined heat and power plants;
- -construction and reconstruction of electric networks, building of station units, substations and electrical networks for connecting facilities that produce electricity from renewable energy sources;
- construction and reconstruction of local networks, station units and substations for connecting facilities that produce electricity from renewable energy sources;
- equipping business entities in the production of heat energy of communal ownership with accounting devices of heat energy actual delivery and residential buildings with house devices of accounting;
- stimulate population to implement energy efficiency measures through reimbursement of the loan involved in the acquisition of boilers using any fuels and energy (excluding natural gas);
- realizing measures aimed at building in society the conscious relation to the need for energy efficiency, development and use of renewable energy sources and alternative fuels;

iii. *optimization of the structure of energy balance of the state, in particular the replacement of traditional energy resources to the other types, including obtained from renewable energy sources and alternative fuels and secondary energy resources by:*

- construction of power generating capacity from wind energy;
- realization of projects on construction of solar plants for production of electric and heat power, installations for the production of biodiesel and bioethanol fuel, synthetic fuel;
- restoration of small hydro energetic and construction of new capacities;
- -projects on construction of installations for solid biofuel and biogas for heat and power;
- realization of pilot projects on construction plants for electricity generation using biomass, construction of geothermal power plants using associated gas;
- development of feasibility study and project of construction of typical modern mini heat power station that runs on biomass and other alternative fuels;
- introduction technologies of using industrial gas and low-pressure gas which is produced from oil and gas deposits for heat and electric power;
- realization of projects of peat processing and production of peat briquettes, milled peat;
- scientific and technical support of implementation the Program, including conducting research and development work in the field of energy carries production from renewable energy sources and alternative fuels;
- creation a system of monitoring energy carries production from renewable energy sources and alternative fuels under the Programme activities;
- implementation a research of potential of regions on the placement the objects of renewable energy;
- implementation a research of the current condition of small hydro power plants;
- implementation a research of wind potential, including the identification of priority areas for the location of wind farms and install measuring equipment.

Sanation of apartment houses, social facilities and building of institutions that are fully funded from the state budget is a complex of technical measures aimed at their recovery and bringing their heat characteristics in line with modern requirements, norms and standards, reducing energy and water losses, and improve conditions of workers.

iv. *Works of sanation include:*

- thermoisolation of external walls of buildings, basement and foundation;
- modernization of the roof with possible installation on it solar collectors;
- modernization of heating, plumbing, sewer, ventilation and electrical networks of building, transfer it to accumulation electric heater heating;
- replacement of radiators, installation of accounting devices of energy sources and water, introducing multiple electricity accounting;
- construction or modernization of boiler room in the building;
- improvement or repair of heating units;
- installation of windows, balcony blocks and front doors.
- E*nergy efficient equipment*, technologies, materials which are implemented using the mechanism of compensation of interest at the rate specified on loans obtained borrowers in financial institutions, and relevant works are:

v. *for single-family houses:*

- gas boilers with automatic natural gas supply, including the cost of installation;

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- electric boilers, including the cost of installation;
- boilers which run on alternative fuels, including the cost of installation;
- heat pumps, including the cost of installation;
- solar collectors for production of heat energy and water heating, including the cost of installation;
- solar panels for production electricity, including the cost of installation;
- radiators with thermostats, accounting devices for gas and water, including the cost of installation;
- windows, balcony blocks and front doors, including the cost of installation;
- works with external insulation of building walls, basement and foundation;
- works on modernization of heat, plumbing, sewer, ventilation and electrical networks in the home;

vi. *for apartments in apartment buildings:*

- radiators with thermostats, including the cost of installation;
- accounting devices of hot water with temperature control, including the cost of installation;
- accounting devices for gas and cold water, including the cost of installation;
- windows, balcony blocks and front doors, including the cost of installation;
- works with insulation of external walls of apartment buildings.
- Program implementation *will allow*:
- reduce the energy intensity of GDP by 20% compared with 2008 .;
- optimize the structure of energy balance of the state, in which the share of energy carries obtained from renewable energy sources and alternative fuels will be in 2015 at least 10%;
- improve the country's energy security level and competitiveness of the national economy;
- reduce Ukraine's dependence on imported energy, the consumption of fossil fuels, technogenic impact on the environment and improve level of environmental safety of heating systems;
- create jobs;
- improve the mechanism of state management and regulation in the field of energy efficiency, saving and alternative energy, optimize structure and volume of energy consumption;
- reduce the production costs by 10%, non-production energy carries losses by 25% of the relevant parameters which were in force at the time of adoption of the program;
- eliminate cross-subsidies in the tariff and pricing;
- partly solve the problem of payment of arrears from the payment of consumed energy resources;
- create conditions for attracting financial resources needed to upgrade and modernize production facilities;
- increase the economic and energy efficiency and level of reliability of power equipment of heat power plants, combined heat and power plants;
- optimize the structure of energy balance of the state, in particular to secure the reduction of the share of natural gas and oil products, coal and peat, replacement them by other types of energy resources, primarily obtained from alternative energy sources and secondary energy resources. As a result of implementation of the program the amount of substitution of natural gas in the energy balance of the state should be since 2016 at least 15 bln cubic meters, and oil products - 1 mln tons;
- increase the level of heat supplies to the population and reduce the use of natural gas for heating housing by 60%, of buildings of budgetary institutions - by35%;
- reduce the volume of state budget to finance the provision of public utilities in energy budget institutions by 50%;
- secure a reduction by 25% consumption of imported natural gas;
- reduce the amount of capital investment in the replacement of the heat power equipment on municipal energy plants, industry and oil and gas industry;
- reduce by 20% the power intensity works on transportation, storage and distribution of gas compared with 2008, to increase the reliability and energy efficiency of the transit of natural gas pipelines;
- decrease by 15-20% the volume of use natural resources (water, minerals, air, etc.) by reducing the consumption of energy resources;
- provide 15-20% reduction of emission of polluting substances;
- increase the level of public services for all segments of the population with a simultaneous decrease in tariffs for such services;
- decrease the social tension by reducing emergency stopping heat power plants and electricity distribution networks.

In addition, March 16, 2011, the joint meeting of the Presidium of the National Academy of Sciences of Ukraine and the Board of the State Agency for Energy Efficiency and Saving on the subject: "Problems of energy efficiency and development of renewable energy, ways of their solutions" [12].

At this meeting it was noted that in Ukraine there is a significant import of energy resources that threatens the energy security of the state. In particular problems that stimulate industrial waste are directive, not a market pricing, inefficiencies of work in the power enterprises and, importantly in this context, the decline of sectoral science. It is therefore necessary to carry out complex of actions to reduce energy intensity, increasing of energy efficiency and diversification of energy sources. These actions should be: restructure of economic (primarily – reducing growth of GDP) by government reforms (i.e. public-private partnership for technological modernization, standardized system of

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audit, state expertise on the introduction of renewable energy sources, etc.); structural and technological restructuring of the economy by removing outdated morally and physically worn-out equipment, the use of innovative and investment projects; potential use of solar, wind, geothermal and biomass energy. In addition, the Energy Strategy of Ukraine till 2030 requires scientific justification, considering the economy condition of Ukraine. To find new solutions and approaches to improve issues of the energy efficiency of the country is necessary domestic scientific support, for which the State Agency for Energy Efficiency and Saving appealed to the National Academy of Sciences of Ukraine, and this meeting was the first step in this direction. It was also announced the draft of *agreement between the State Agency for Energy Efficiency and Saving and National Academy of Sciences of Ukraine*, aimed at the intensification of development of scientific and technological solutions to increase in Ukraine knowledge-intensive productions and accelerating implementation of technologies for renewable energy.

b) Development and implementation of energy saving light diode light sources and lighting systems on their basis in Ukraine in 2009 – 2013

Ukrainian Cabinet of Ministers resolution No.632, dated July 9, 2008 *"On approving the State Target Scientific-Technical Program "Development and implementation of energy saving light diode light sources and lighting systems on their basis for 2009 – 2013"* launched a program of developing and implementing into Ukrainian economy a new technology of "solid-state lighting" to ensure considerable decrease of costs of electric power used for lighting, its quality increase and ecosystem's load abatement [13].

Achievements in the area of optoelectronics with using NBIC-technologies provided for creating light diode lighting systems with the energy efficiency, which exceeds incandescent lamps efficiency 8-12 times. Utilization of such sources provides for considerable decrease of energy costs used for lighting and electric grid management, enhance the level of environmental safety, and streamline the design of automated systems to manage lighting grids and light signaling equipment. According to the experts of Ukrainian National Academy of Science, replacement of 30% of incandescent lamps in Ukraine with light diode lighting sources would provide for saving 13.8 bln. kWh/year of electric power and decrease carbon emission into atmosphere by 7.8 mln. tons. Table 1 shows the most prominent implementation results of the mentioned Target Scientific-Technical Program for 2009–2013 [14 - 18].

Table 1 : The most prominent implementation results of the Target Scientific-Technical Program "Development and implementation of energy saving light diode light sources and lighting systems on their basis" for 2009–2013

Year	Program direction	The most prominent results	Practical value
2009	Designing materials, technologies and methods to control thermo-regulation of light diode lighting sources	The first technological installation for generating hetero-epitaxial structures on the basis of GaN was adjusted and commissioned; the setting of the 2nd installation was started. Those structures would be the foundation for designing blue light diodes, the radiation of which in combination with broad-band luminophors yields white light.	Installations to generate the materials would be the foundation to design blue light diodes
		The first luminophors' experimental samples for white light diodes on the basis of organic and non-organic compounds were designed.	Luminophors samples for white light diodes
		Experimental sample of air-tight technological box to coat light diode structures in the protecting atmosphere of inert gas was designed, manufactured and installed; hardware-software suite for coating light diode structures with protective organic sealing was commissioned	Hardware-software suite for surfacing ligcoating diode structures with protective organic sealing
	Production of light diode emitters and their systems	Technological line to assemble experimental samples of powerful light diodes in "clean corridor" module was designed; light diodes experimental samples of 4 W, 12 W and 16 W capacities were manufactured with using imported crystals.	Light diodes experimental samples of 4 W, 12 W and 16 W capacities
		Experimental batch of the 1st Ukrainian light diode lamps with E27 lamp cap was designed; the lamp ensures uniform light flux, absence of point brilliance and gleam	Experimental batch of the 1st Ukrainian light diode lamps with E27 lamp cap
		Experimental samples of shadowless surgical lamp on powerful light diodes and experimental samples of explosion	Experimental samples of shadowless surgical lamp on

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		proof lighting for miners were designed and manufactured	powerful light diodes and experimental samples of explosion proof lighting for miners
		On the basis of induced birefringence effect a polarized modular appliance was manufactured with a specific feature to perform a full Stokes-polarimetry analysis of partially polarized radiation	Polarized modular appliance to perform a full Stokes-polarimetry analysis of partially polarized radiation
	Designing means to diagnose and certify light diode light sources	Measuring system for contact-free dynamic testing of light diodes' radiation and heat parameters in the visible range with high time (10 μs) and space (< 20 μv) bifurcated capacity was commissioned.	Measuring system for contact-free dynamic testing of light diodes' radiation and heat parameters in the visible range with high time (10 μs) and space (< 20 μv) bifurcated capacity
2010	Designing materials, technologies and methods to control and thermally regulate light diode lighting sources	The method of obtaining film-type organic-nonorganic hybrid nano-composites on the basis of poly-epoxy-propyl-carbazol and quantum-size CdS nano-crystals was tested	The method of obtaining film-type organic-nonorganic hybrid nano-composites
		Films of aluminum-nitride of polar and non-polar orientation were obtained on sapphire chip for the first time; they are prospective for designing hetero-structures that provide for considerable light diodes quality increase	Hetero-structures that provide for considerable light diodes quality increase were designed
	Production of light diodes emitters and their systems	First Ukrainian light diode lamps of 3 W to 8 W capacity in different structural modifications were designed and commissioned into production. 2 types of ceiling light diode lamps with the improved light distribution and enhanced energy efficiency were designed.	Production of Ukrainian light diode lamps of 3 W to 8 W capacity; 2 types of ceiling light diode lamps
		Light diode surgical lamp with powerful radiation without infrared component and miner's helmet with self-powered energy efficient explosion-proof light diode lamp were designed	Light diode surgical lamp and miner's helmet with energy efficient explosion-proof light diode lamp
		Dynamic full-color modular type fixtures of light diode illumination systems for EURO 2012 championship were designed	Fixtures of light diode illumination systems for EURO 2012
		Hardware components production for a wide range of energy efficient light diode lamps was arranged	Hardware components production for light diode lamps
		Assembly line that ensures lamps assembly using Ukrainian components designed by the program as well as checking, marking and packaging finished products.	Assembly line that ensures lamps assembly using Ukrainian components
	Designing means to perform diagnostics and certification of light diode lighting systems	Metrological laboratory to certify light diodes and light diode lighting appliances was set and equipped with modern measuring hardware	Metrological laboratory to certify light diodes and light diode lighting appliances
		Impact of light diode lighting sources radiation of different spectral composition on the main physiological functions of human organism's systems – vision, nervous and cardio-vascular ones – was researched	
2011	Designing materials, technologies and methods to control and thermally regulate light diode lighting sources	Ways of enhancing energy efficiency of GaN hetero-structures were theoretically grounded and experimentally proved; new technology elements for creating basic structures of powerful light diodes were developed together with new types of organic and nonorganic luminophors for white light diodes.	Technology elements for creating basic structures of powerful light diodes together with new types of organic and nonorganic luminophors
	Implementation of pilot projects in making use of energy saving light	Cluster model of the program tasks and activities was implemented; the program unites Ukrainian National Academy of Science institutions, their research production capacities and industrial enterprises ("Gazotron-Lux",	Cluster model of the program tasks and activities implemented

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	diode lighting systems	"Vatra", "Electronmash", "Information Technologies", "Ecta-Prom", "SU-24")	
		Pilot projects to use light diode lighting equipment in street lighting, housing-municipal economy, budget and production spheres, transportation in Kyiv, Kharkiv, Donetsk were implemented.	Pilot projects to use light diode lighting equipment in street lighting, housing-municipal economy, budget and production spheres, transportation
2012	Designing materials, technologies and methods to control and thermally regulate light diode lighting sources	New materials to produce high efficient semi-conducting emitting elements were developed - non-organic and organic luminescent materials to improve biological quality of lighting for white light diodes	Non-organic and organic luminescent materials to improve biologic quality of lighting for white light diodes
		Operating schedule to create solid compounds $In_{x1}Ga_{1-x}N/In_{x2}Ga_{1-x2}N$ with minimum Indium fluctuation on hetero-boundaries was optimized.	Creation of solid compounds $In_{x1}Ga_{1-x}N/In_{x2}Ga_{1-x2}N$
		Unique process of sapphire modification through thermo-chemical nitridation was developed together with new systems of thermal stabilization of light emitting crystals on the basis of heat conducting ceramics and plastics, as well as systems' elements to control capacity and spectral composition of radiation.	Process of sapphire modification and new systems of thermal stabilization of light emitting crystals
	Production of light diode emitters and their systems	New types of light diode lamps with electronic control systems were developed together with lighting systems for housing-municipal economy, explosion hazardous facilities, medical purposes, as well as for search-light and illumination systems.	New type of lighting systems for municipal economy, explosion hazardous facilities, medical purposes, search-light and illumination systems
	Designing means to perform diagnostics and certification of light diode lighting systems	Center for light diode lighting systems diagnostics was set up and equipped with modern metrological equipment	Center for light diode lighting systems diagnostics was equipped
		Impact of radiation spectrum of light diode light sources with different color temperature was studied on the basis of vision, cardio-vascular and other organism's functions research.	Impact of radiation spectrum of light diode light sources on vision, cardio-vascular and other organism's functions
		4 new standards for light diode lighting were developed and harmonized with the international standards	New standards for light diode lighting
	Implementation of pilot projects in making use of energy saving light diode lighting systems	Open Joint Stock Company (OJSC) «Ukrsvitlolising» was set up to implement light diode lighting systems; its business activity was arranged	OJSC «Ukrsvitlolising» was set up
		Pilot projects in implementing light diode lighting systems for Ukrainian big cities streets, housing and municipal sites, buildings from budget sphere and industrial facilities, metro stations, as well as for night city streets decorative design. 4 mln. kWh/year was totally saved due to installing street lamps and light diode lamps.	Implementation of light diode lighting systems for Ukrainian big cities streets, housing and municipal sites, metro stations, etc.
		500 light diode ceiling lamps undergo service test in the universities class-rooms, Ukrainian National Academy of Science halls and "Derzhinformnauka" building, as well as testing of multi-color illumination system for Ternopil city	Service testing of 500 light diode ceiling lamps and municipal illumination system
2013	Designing materials, technologies and methods to control and thermally regulate light diode lighting sources	Process flow to produce integral light sources on the basis of white light formation RGB method was developed	Integral light sources produciton
		Operating schedules of epitaxy and contact systems for light diode structures of blue and green light were tested	Light diode structures of blue and green light
		Process flow of light diode structures AlGaN/InGaN/GaN/Al_2O_3 forming with using the method of gas-phase epitaxy from metal-organic compounds with quality hetero-boundaries $In_{x2}Ga_{1-x2}N/p\text{-}Al_xGa_{1-x}N$, as well as $p\text{-}Al_xGa_{1-x}n/p\text{-}GaN$ and contact layer surface morphology, which cumulatively ensured reaching energy efficiency more than 80 lm/W, was optimized	Technological process of forming light diode structures
		Methods to carry out mechanical and chemical cleaning of sapphire chips' surfaces to perform thermo-chemical nitridation were developed.	Methods to clean sapphire chips' surfaces

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		5 light converting luminophors were synthesized and polymeric light converting materials' prototypes (films, boules and blocks) on their basis were developed to improve light quality of energy saving light diode lighting sources	5 light converting luminophors and corresponding materials on their basis
		With the help of solid-phase reactions we synthesized activated by cerium ions calcium-scandium-silicon grenades to use in structures "blue light diode – broad-band white luminophor". It is demonstrated that luminescent spectrum $Ca_{3(1-x)}Ce_{3x}Sc_2Si_3O_{12}$ represents a super-position of two broad bands with maximums at 507 nm and 550 nm.	Blue light diode – broad band white luminophor was synthesized.
	Production of light diode emitters and their systems	Dummies of organic light emitting diodes on the basis of conjugated polymers MEH-PPV and SuperYellow were produced; their volt-ampere and electro-luminescent characteristics were researched.	Dummies of organic light emitting diodes
		Organization of series production of light diode emitting clusters on the basis of COB-technology was started.	Production of light diode emitting clusters
		New types of high efficient light diode lighting systems were developed : ceiling lamps of different configurations with the assigned parameters of light direction; light diode lamps with high energy and ergonomics indicators; powerful search-light systems; wide range of street light diode lamps	New types of high efficient light diode lighting systems
	Designing means to perform diagnostics of light diode lighting sources	5 Ukrainian state standards drafts for light diode lighting sources were developed	Ukrainian state standards drafts for light diode lighting sources
	Implementation of pilot projects in making use of energy saving light diode lighting systems	8 pilot projects to implement energy saving light diode lighting systems in the cities of Simferopol, Kharkiv, Slovyansk were performed	Pilot projects to implement energy saving light diode lighting systems
		Comprehensive implementation of light diode lighting systems at socially important Ukrainian sites was started: 4 major highways (Kyiv – Odesa, Kyiv – Kharkiv, Kyiv – Lugansk, Kyiv – Vyishgorod); 3 universities (Kyiv, Kharkiv); lyceum (Chuhuiv); hospital «Okhmatdyit» (Kyiv).	

Composed according to [14-18].

IV. Conclusions

The performed research proved that arrangement of Ukrainian production of light diode light sources with using NBIC-technologies would help develop : energy saving light diode lamps with caps similar to incandescent lamps caps ; lighting appliances to satisfy needs of housing-municipal economy ; special fire– and explosion-safe lamps for miners, ore workings, fire-hazardous sites of oil&gas and chemical industries ; street light diode lamps ; ceiling light diode lamps to light administrative buildings and industrial sites ; light diode illumination systems to light buildings and facilities ; special purpose lighting systems ; lighting systems for transport, etc.

Industrial production of energy saving light diode lighting sources, energy consumption of which is 8 – 12 times less in comparison with incandescent lamps, with the service life of 50,000 hours, would help save nearly 400 mln. kWh/year of electric energy for each million of light diode lamps. If using 5 – 7 mln. light diode lamps, the aggregate saving on electric energy cost decrease would be 720 – 1000 mln. UAH per year, provided the electric power price would be 0.36 UAH per 1 kWh.

To develop national branch of light diode lighting hardware it is expedient to attract and concentrate investment funds with the help of a newly set specialized open joint stock leasing company, the profile activity of which would be to lease out light diode lighting hardware.

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Classification Des Secteurs Créateurs D'emplois Au Maroc : Analyse Du Multiplicateur D'emploi Par Le Modèle Input-Output

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Résumé - Le présent article a pour objectif d'identifier les secteurs créateurs d'emplois à l'aide de l'analyse input-output en calculant les multiplicateurs d'emploi. Cette analyse permet de simuler l'impact de développement des différents secteurs de l'économie marocaine sur la création d'emploi. Ainsi, l'adoption de politiques sectorielles créatrices de richesses et d'emplois s'avère nécessaire pour remédier à la problématique du chômage au Maroc. Pour ce faire, il convient de mettre en place une stratégie pour la promotion de la croissance économique et la création d'emplois à travers l'investissement dans les secteurs créateurs d'emplois.

Mots clés: modèle input-output, tableau des ressources et des emplois, multiplicateur d'emploi, marché d'emploi.

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Classification Des Secteurs Créateurs D'emplois Au Maroc : Analyse Du Multiplicateur D'emploi Par Le Modèle Input-Output

El Alaoui Aicha [α] & Boudhar Abdeslam [σ]

Résumé - Le présent article a pour objectif d'identifier les secteurs créateurs d'emplois à l'aide de l'analyse input-output en calculant les multiplicateurs d'emploi. Cette analyse permet de simuler l'impact de développement des différents secteurs de l'économie marocaine sur la création d'emploi. Ainsi, l'adoption de politiques sectorielles créatrices de richesses et d'emplois s'avère nécessaire pour remédier à la problématique du chômage au Maroc. Pour ce faire, il convient de mettre en place une stratégie pour la promotion de la croissance économique et la création d'emplois à travers l'investissement dans les secteurs créateurs d'emplois. Les principaux résultats de cette étude montrent que les investissements doivent s'orienter vers les industries de "raffinage de pétrole et autres", les industries "alimentaire et tabac", les industries "chimique et parachimique" et les industries "mécanique, métallurgique et électrique" qui ont des multiplicateurs d'emploi très élevés, mais sans négliger le secteur des "bâtiments et travaux publics", le secteur de "transports", le secteur d'"agriculture, chasse et services annexes" et le secteur de la "pêche, aquaculture" car ils ont un emploi direct très élevé.

Mots clés: modèle input-output, tableau des ressources et des emplois, multiplicateur d'emploi, marché d'emploi.

I. Introduction

La croissance économique est nécessaire pour créer de l'emploi et pour réduire la pauvreté. Ces deux objectifs sont primordiaux surtout pour un pays avec un revenu par tête modérément moyen, un taux de jeune très élevé et un taux de demandeurs d'emploi en augmentation.

La question de chômage reste toujours d'actualité parce que c'est le cœur de tout conflit social ou politique. La révolution tunisienne a été déclenchée en 2011 par un jeune tunisien. Par la suite, elle s'est propagée aux protestations et révolutions dans d'autres pays arabes, connues sous le nom de printemps arabe.

À cause de la pauvreté et de chômage, ce jeune tunisien a exercé le seul travail "facile" à trouver et à "exercer" celui de vendre des fruits et des légumes dans les rues et les ruelles de Sidi Bouzid, une ville agricole en Tunisie. Le modèle de ce vendeur ambulant existe dans n'importe quel autre pays arabe, comme le Maroc. L'explication de ce modèle est simple malgré que la solution soit difficile. La difficulté de trouver des emplois stables avec un salaire honoré soit dans le secteur privé ou le secteur public pour vivre dans la dignité et la satisfaction, les jeunes chômeurs (diplômés et non diplômés) s'orientent vers le secteur informel sous ses différentes formes.

Les statistiques sur le secteur informel sont limitées. Selon les résultats de l'enquête du Haut Commissariat au Plan (HCP) du Maroc sur le secteur informel en 2007, ce secteur s'est développé à une vitesse rapide durant les dix dernières années. Ces résultats montrent que : "le nombre d'unités de production informelles s'est élevé à 1 550 274 unités, soit une création nette de 320 000 unités en l'espace de 8 ans ou l'équivalent de 40 000 unités par an". Cette enquête révèle, aussi, que ces unités de production informelles sont en augmentation en milieu rural (le taux est passé de 28,4% en 1999 à 30,2% en 2007) et la plupart des unités informelles sont localisées en milieu urbain 69,8% surtout dans les grandes villes marocaines comme Casablanca, Rabat, et Marrakech.

La solution de chômage est délicate. En plus des solutions politiques, juridiques et sociales aux problèmes de chômages et de pauvreté, il faut que les décideurs fixent des politiques économiques adéquates pour réduire le taux de chômage, en particulier le chômage des diplômés qui reste une question décisive dans n'importe qu'elle stratégie gouvernementale et de mettre en place des mesures pour structurer le tissu productif.

L'étude de la structure de la population active et du marché du travail au Maroc reste toujours d'une importance primordiale. Mais cela ne suffit pas pour trouver des solutions structurelles à la problématique du chômage. Car en effet, le chômage doit être approché selon une approche économique qui prend en considération aussi bien l'offre que la demande d'emploi.

Selon cette approche globale, l'offre d'emploi dépend largement de l'investissement et de la capacité

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de l'économie marocaine à créer de la richesse. En effet, la réalisation d'un taux de croissance économique qui permet d'absorber la main d'œuvre en chômage et la promotion de l'investissement constituent une solution économique pour créer l'emploi et lutter contre le chômage.

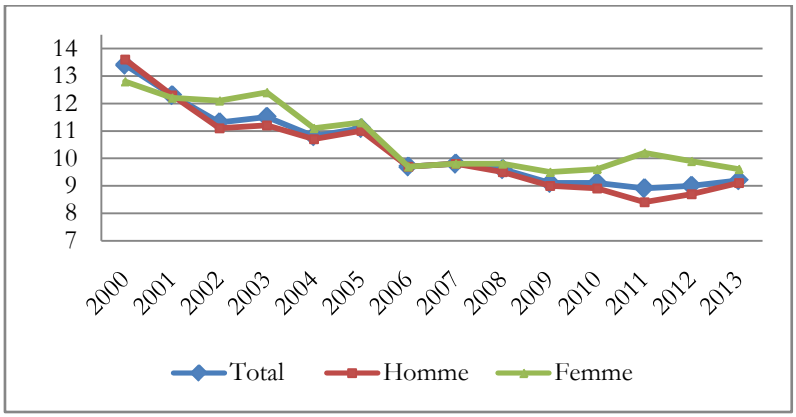
Ainsi, parallèlement à l'étude de la structure de la population active et du marché du travail, il convient d'analyser le processus de création de richesse en vue de mesurer la capacité du tissu économique marocain à créer de l'emploi. Cette analyse de la structure économique permet de mesurer la contribution de chaque secteur de l'économie marocaine à la création d'emploi, et de repérer les secteurs moteurs et créateurs d'emploi qui doivent, par conséquent, faire l'objet de mesures d'encouragement dans le cadre de la stratégie marocaine de promotion de l'emploi.

Ce travail a, donc, pour objectif de déterminer les secteurs clés qui permettent d'absorber le chômage à travers l'analyse des relations croisées directes fournies par le Tableau Ressources Emplois (TRE), il est possible de développer une approche dite cumulée des interrelations entre les branches d'activités qui donne une vue complète de l'économie et par la suite permet de mesurer l'effet direct et l'effet indirect de chaque branche dans le processus de formation de l'emploi. Cette approche dite Analyse Input Output (AIO) est utilisée pour calculer les multiplicateurs d'emploi qui vont être utilisés pour classer les différentes branches d'activités. Cette classification peut guider les politiciens et les décideurs vers les secteurs créateurs d'emploi et, donc, encourager la demande finale dans ces secteurs afin d'augmenter la productivité et, par la suite, l'employabilité. Les données utilisées sont tirées à partir des matrices de comptabilité sociale (MCS) marocaine des six dernières années 2007 à 2012[1].

Ce travail est organisé comme suit. La seconde section présentera les principales caractéristiques de la population active marocaine. La troisième section présentera les caractéristiques du tissu productif marocain à partir du calcul des indicateurs tirés des TRE 2007-2012. La quatrième section présentera la méthodologie du modèle input-output appliquée pour déterminer le classement des branches d'activités en utilisant les multiplicateurs d'emploi. La cinquième section discutera les principaux résultats du modèle. Enfin, la dernière section sera consacrée à la conclusion.

II. Caractéristiques de la Population Active Marocaine

Le taux de chômage au Maroc a connu une stagnation autour de 9% depuis les huit dernières années (voir graphe 1). Cependant, l'évolution du PIB réel marocain est très fluctuante, elle a enregistré un taux d'accroissement moyen de 4,5% (voir graphe 2). L'évolution du taux de chômage ne suit pas l'évolution du PIB réel.

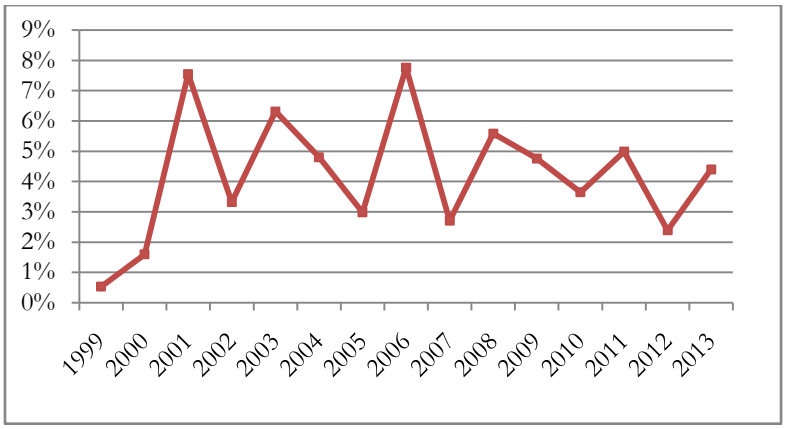


Graphe 1 : Évolution du taux de chômage au Maroc entre 2000 et 2013

Source : Élaboré à partir des données du HCP

[1] Les données sont tirées du Haut Commissariat au Plan (HCP) du Maroc. Les données de 2012 sont provisoires.

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Graphe 2 : Évolution du PIB réel entre 1998 et 2013

Source : Élaboré à partir des données du HCP

L'évolution du taux de chômage cache des disparités importantes selon le genre, le milieu de résidence, l'âge et les diplômes, à savoir (i) le taux de chômage des femmes est plus élevé que celui des hommes, (ii) le taux de chômage des personnes âgées est faible par rapport à celui des personnes jeunes, (iii) au milieu urbain, le taux de chômage est fort par rapport à celui du milieu rural, et (iv) le taux de chômage des diplômés est très élevé par rapport à celui des non diplômés, voir Ezzahid and EL Alaoui (2014). Les conclusions de ces auteurs sont similaires à celles obtenues par la banque mondiale (2006).

III. Caractéristiques du Tissu Productif Marocain

Pour analyser les caractéristiques du tissu productif marocain, on se propose de calculer, à partir des résultats directs fournis par les TRE de 2007 à 2012, un certain nombre d'indicateurs qui permettent d'avoir une idée sur les secteurs clés de l'économe marocaine en matière de création de richesse, de productivité et d'apport en devises.

Pour ce faire, il convient d'analyser la part de la valeur ajoutée de chaque secteur dans la valeur ajoutée totale, de mesurer la productivité sectorielle et d'apprécier la part des échanges extérieurs de chaque secteur dans les échanges extérieurs totaux. Le tableau suivant résume les différents résultats.

Table 1 : Structure de la Valeur Ajoutée (VA), de l'Emploi (L), de la productivité (Pté) et des Exportations (X) par secteur, en %.

	Année	2007	2008	2009	2010	2011	2012	Moyenne
Agriculture	VA(1)	13,0	13,9	15,6	14,6	14,7	13,7	14,3
	L(2)	43,4	41,8	41,3	40,3	39,8	39,2	41,0
	Pté(3)	1,7	2,1	2,5	2,5	2,7	2,7	2,4
	X(4)	1,8	1,8	1,7	1,7	1,7	1,7	1,7
Mines	VA	2,3	6,9	2,5	4,1	5,3	5,0	4,3
	L	0,5	0,5	0,4	0,4	0,5	0,6	0,5
	Pté	27,2	88,4	39,8	70,7	82,4	59,6	61,3
	X	1,4	3,0	0,9	1,6	2,0	2,0	1,8
Énergie	VA	2,9	2,6	2,9	3,1	2,7	2,7	2,8
	L	0,4	0,4	0,4	0,4	0,4	0,4	0,4
	Pté	42,1	41,2	44,0	51,6	56,0	57,4	48,7
	X	0,7	0,8	0,6	0,5	1,2	1,2	0,8

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Industrie	VA	14,2	13,3	15,1	14,6	14,7	15,0	14,5
	L	11,8	11,9	11,4	11,4	10,9	10,5	11,3
	Pté	6,8	7,1	8,7	8,9	10,0	10,9	8,7
	X	17,2	18,5	13,5	17,2	17,6	18,3	17,0
Services non marchands	VA	47,7	44,5	44,8	44,3	42,6	43,0	44,5
	L	29,7	31,1	32,1	32,9	33,6	34,0	32,2
	Pté	9,1	9,0	9,2	9,3	9,4	9,7	9,3
	X	6,6	6,7	6,1	6,3	6,4	6,4	6,4
Services marchands	VA	19,9	18,8	19,2	19,4	20,0	20,6	19,6
	L	14,3	14,3	14,4	14,6	14,8	15,2	14,6
	Pté	7,9	8,2	8,8	9,2	10,0	10,4	9,1
	X	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Source : Élaboré à partir des données du HCP.

Note :

1. *(VA(i)/PIB).100 avec i représente les branches d'activités ;*
2. *(Employé (i)/ Total employé) .100 ;*
3. *(VA(i)/Employé(i)) .100 ;*
4. *(Exportation(i)/PIB) .100.*

a) Première caractéristique : une économie marquée par une forte dépendance au secteur agricole et un développement limité du secteur industriel

L'économie marocaine est caractérisée par sa forte dépendance du secteur agricole. La plupart de la population est occupée par ce secteur (plus de 41% en moyenne). De même, la valeur ajoutée du secteur agricole représente, en moyenne, 14,3% du le PIB.

Le secteur agricole reste le moteur de croissance au Maroc malgré le fait qu'il soit dépendant des conditions climatiques et sa contribution dans le PIB est perturbée suite aux pratiques moins modernisées aux cultures et des retards relatifs à l'amélioration de la productivité agricole. La valeur ajoutée par personne dans ce secteur est très faible (presque 2,4% en moyenne). En plus, les recettes d'exploitation du secteur agricole sont faibles. Elles sont de 1,7% en moyenne.

D'un autre côté, le développement du secteur industriel au Maroc reste limité et au dessous des attentes. Cependant, sa contribution dans le PIB est presque équivalente à celle du secteur agricole. L'industrie se compose principalement des industries "alimentaires et tabac", des industries du "textile et du cuir", des industries "chimique et parachimique", des industries "mécanique, métallurgique et électrique", et des "autres industries manufacturiers hors raffinage pétrole" qui sont considérés comme des secteurs les plus structurés au Maroc.

Les industries "alimentaires et tabac" ont enregistré une évolution remarquable entre 2007 et 2012, soit de 16,4% et occupent la première place dans la valeur ajoutée du secteur industriel avec une part de 30% enregistrée en 2012. Leur contribution dans le PIB reste très faible en deçà des taux enregistrés dans les pays avancés. Le Maroc est un pays agricole et son économie se diversifiée très lentement. La participation des industries "alimentaires et tabac" dans l'emploi total du secteur industriel est de 11,3% en moyenne et leur participation dans les exportations industrielles est de 17% en moyenne.

Pour les industries du "textile et du cuir", elles sont en expansion au Maroc malgré la chute enregistrée en 2008 de 2%. Ce secteur a connu en 2009 une évolution de 7%, et contribue, en moyenne, pour 2% dans le PIB marocain et pour 17% dans la valeur ajoutée du secteur industriel. Cette contribution dans la valeur ajoutée du secteur industriel est en diminution : elle est passée de 21% en 2007 à 14% en 2012. Tandis qu'en termes d'emploi et de recettes d'exportation, il occupe la première place dans le secteur industriel, avec des taux moyens de 44% et de 28%, respectivement.

Les industries "mécanique, métallurgique et électrique" occupent la deuxième place dans la valeur ajoutée du secteur industriel avec un taux moyen de 21%. Elles occupent la troisième place, en termes d'emploi, après les industries du "textile et du cuir" et le raffinage de pétrole avec un taux moyen de 16,5% des emplois du secteur industriel. Tandis qu'en termes de recettes d'exportation, elles occupent la première place avec une contribution moyenne de 29,2% dans les recettes d'exportation de ce secteur.

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L'examen de la valeur ajoutée par personne indique que le secteur de l'industrie enregistre des niveaux de productivité élevés à côté de secteur des mines, du secteur de l'énergie et de secteurs des services marchands. Au niveau du secteur de l'industrie, ce sont les industries "chimique et parachimique", les industries "alimentaires et de tabac" et les "industries mécanique, métallurgique et électrique" qui enregistrent en moyenne des taux de la productivité les plus élevés soient de 74%, 21% et 12%, respectivement. Ces secteurs sont généralement caractérisés par une forte intensité en capital, contrairement au secteur de "textile et d'habillement" qui constitue un secteur à forte intensité en main d'œuvre et qui enregistre une productivité de seulement de 4% en moyenne.

b) Deuxième caractéristique : une économie marquée par une croissance boitée du secteur du BTP

Les services marchands ont connu une évolution timide et fluctuante. La part de la valeur ajoutée des services marchands est de 44% en moyenne. Le secteur de "commerce" et le secteur "d'immobilier, location et services rendus aux entreprises" ont connu une évolution importante et leurs parts dans la valeur ajoutée sont, respectivement, de 10% et de 12% en moyenne. En outre, l'étude de la valeur ajoutée par personne dans le secteur des services marchands indique qu'elle est faible, soit de 9% en moyenne. Les services qui représentent les plus hauts niveaux de la productivité sont les "services financiers et d'assurances" (70% en moyenne), les "services de télécommunication" (34% en moyenne) et les "services d'immobilier, location et services rendus aux entreprises" (61% en moyenne). La productivité élevée observée dans ces secteurs est expliquée en partie par une forte intensité en nouvelles technologies de l'information et de la communication (NTIC).

La contribution des bâtiments et travaux publics (BTP) dans le PIB est de 6% en moyenne. Cette contribution est jugée insuffisante pour un secteur qui possède des potentialités énormes et qui est sensé exercer des effets d'entraînement sur l'ensemble de l'économie marocaine. En termes d'emplois créés dans le secteur des services marchands, la branche d'activité BTP occupe la deuxième place (29% en moyenne) après le secteur de commerce (45,4% en moyenne). Et au niveau de l'emploi marocain, la branche d'activité BTP occupe la troisième place, avec seulement 9% après le secteur "d'agriculture, forêt et services annexes" et le secteur du commerce. La productivité du BTP reste très faible, soit seulement de 5% en moyenne. Ainsi, le service "de transports, de commerce" et le service des "hôtels et restauration" ont une productivité très faible, entre 5% et 8% au cours de la période 2007-2012.

c) Troisième caractéristique : une économie dominée par le secteur public

La part de la valeur ajoutée des services non marchands est de 19% en moyenne. Le secteur "d'administration publique et de la sécurité sociale" (APSS) occupe la deuxième place par rapport à l'emploi de secteur non marchand (34% en moyenne) suivi par le secteur "d'éducation, de santé et de l'action sociale" (ESAS) (28% en moyenne). La première place est occupée par le secteur "des autres services non financiers". En moyenne, la valeur ajoutée par personne est faible dans l'ensemble de secteur non marchands, 11% pour l'APSS, 14% pour l'ESAS et seulement 2% pour les "autres services non financiers".

d) Quatrième caractéristique : une économie dépendante des recettes de phosphates

La contribution du secteur des mines dans le PIB est de 4% en moyenne. Les phosphates constituent la part la plus importante dans la valeur ajoutée de ce secteur. Les recettes d'exportations de phosphates sont très dépendantes de la demande extérieure et des cours de cette matière à l'échelle internationale. Les recettes d'exportations du secteur des mines représentent, en moyenne, 6,4% des recettes d'exportations marocaines. L'employabilité de ce secteur est très faible aux alentours de 0,5% en moyenne de l'emploi total. Ce secteur enregistre le plus haut niveau de la productivité avec un taux moyen de 61,3%.

e) Cinquième caractéristique : une économie dépendante des cours des matières premières

Le Maroc est un pays importateur du pétrole. Son économie est dépendante des cours de cette matière. La contribution du secteur d'énergie dans le PIB est de 3% en moyenne. Ce secteur se compose principalement des secteurs du "pétrole brut, du raffinage de pétrole" et "d'électricité et d'eau". Ce secteur a tendance de s'améliorer suite au programme mené par l'État (le programme de l'électrification et de l'alimentation en eau potable du milieu rural). La part de ce secteur dans l'emploi et l'exportation reste très faible. La productivité du secteur d'énergie est très importante. Elle est de 49% en moyenne. Par conséquent, le secteur d'énergie et le secteur des mines sont, généralement, caractérisés par une forte intensité de capital et une haute qualité de la main d'œuvre employé.

f) Sixième caractéristique : une économie ouverte mais avec un solde extérieur négatif

D'un autre côté, l'économie marocaine reste une économie fortement exposée[2] 54% surtout au

[2] Le taux d'exposé du secteur (i) est mesuré par : $Ex_i=Tx_i+(1-Tx_i).P_i$, où Tx_i est le taux d'exportation (Tx_i=Exportation (i) /PIB) et P_i est le taux de pénétration : P_i=Importation(i)/MI, avec MI représente le marché intérieur, appelé aussi consommation apparente : MI= PIB - Exportation +Importation.

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niveau des produits industriels (36,4% en moyenne) et relativement protégée au niveau des services (10% en moyenne). Le taux de couverture[3] est très faible (55% en moyenne) pour l'ensemble des branches d'activités et le solde extérieur[4] négatif, à l'exception du secteur des services marchands qui enregistrent un taux de couverture très suffisant et un solde extérieur positif. L'excédent commercial est réalisé par le secteur des services "des postes et de télécommunications" et le secteur des services de "immobilier, location et services rendus aux entreprises".

IV. Méthodologie

Le calcul des multiplicateurs d'emploi aide à désigner les secteurs créateurs d'emplois. Ces multiplicateurs sont les résultats de l'analyse input output. Cette analyse permet de décrire les différentes relations qui existent entres les branches d'activités. Le modèle suivant résume ces relations entre n secteurs :

Table 2 : Modèle de la Table Input-output :

Secteurs	Consommation intermédiaire				Demande finale	Output total
	S_1	S_2	…	S_n		
S_1	x_{11}	x_{12}	…	x_{1n}	Y_1	X_1
S_2	x_{21}	x_{22}	…	x_{2n}	Y_2	X_2
:	:	:	…	:	:	:
S_n	x_{n1}	x_{n2}	…	x_{nn}	Y_n	X_n
Valeur ajoutée	V_1	V_2	…	V_n		
Input total	X_1	X_2	…	X_n		

Source : Tounsi S. et al. (2012)

Dans ce modèle, X_i présente l'output total du secteur i et Y_i la demande finale totale du secteur i. La relation entre xi et yi peut être représentée comme suit :

$$X_i = \sum_{j=1}^{n} x_{ij} + Y_i, \qquad i=1, 2,\ldots, n \tag{1}$$

Où les x_{ij} représentent les consommations intermédiaires fournies par le secteur i à tous les autres secteurs productifs (j=1, 2,…, n), y compris la consommation du secteur i=j. La relation (1) peut être écrite sous forme matricielle comme suit :

$$X = X.I + Y \tag{2}$$

Où, $X = \begin{pmatrix} x_1 \\ \vdots \\ x_n \end{pmatrix}$, $X = \begin{pmatrix} x_{11} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots \\ x_{n1} & \cdots & x_{nn} \end{pmatrix}$, $Y = \begin{pmatrix} Y_1 \\ \vdots \\ Y_n \end{pmatrix}$ et I représente la matrice unité

Dans ce travail, on ne fait pas de distinction entre la production locale et les inputs importés à cause de la non disponibilité des données relatives à la consommation importée entre les secteurs. Par conséquent, il n'est pas possible de faire une séparation entre une matrice domestique et une matrice importée. Donc, on ne peut pas calculer les coefficients techniques domestiques et les coefficients techniques importés. Les données du Tableau Ressources-Emplois des années 2007à 2012 permettent seulement de calculer les coefficients techniques, notés a_{ij}, sans faire aucune distinction. La formule de calcul se présente comme suit :

$$a_{ij} = \frac{x_{ij}}{x_j} \tag{3}$$

Cette relation peut être écrite de la façon suivante :

$$X_i = \sum_{j=1}^{n} aij \cdot x_j + y_i, \qquad i=1, 2, \ldots, n \tag{4}$$

À partir des a_{ij}, on peut élaborer la matrice des coefficients techniques, notée A. la relation (4) s'écrit sous forme matricielle comme suit : X=AX+Y. Ainsi, la relation entre la demande finale Y et la production totale X se présente de la manière suivante :

$$X = AX + Y \Rightarrow Y = (I - A).X \Leftrightarrow X = (I - A)^{-1}.Y \quad \text{ou } X = B.Y \tag{5}$$

[3] Le taux de couverture est mesuré par : C_i= Importation (i)/Exportation (i).

[4] Le solde extérieur est mesuré par : Solde(i)=Exportation (i)-Importation (i).

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Où :

$$A = \begin{pmatrix} a_{11} & \dots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & \dots & a_{nn} \end{pmatrix},$$

$$I_{(nxn)} = \begin{pmatrix} 1 & \dots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \dots & 1 \end{pmatrix}, \text{et} \quad B = \begin{pmatrix} b_{11} & \dots & b_{1n} \\ \vdots & \ddots & \vdots \\ b_{n1} & \dots & b_{nn} \end{pmatrix}$$

La matrice B présente l'inverse de la matrice de Leontief : $B=(I-A)^{-1}$. C'est cette matrice qui permet de calculer les matrices cumulées du système input-output.

D'un autre côté, à partir du vecteur d'employé par secteur, noté L, on peut calculer le coefficient d'emploi directs, noté ld. L'ensemble des éléments de ce vecteur permet de mesurer l'effet initial ou direct de chaque secteur. Ce coefficient d'emploi direct est calculé comme suit :

$$ld_i = {}^{L_i}/_{X_i} \quad \forall\, i = 1, 2, \dots, n \tag{6}$$

Cette relation peut s'écrire sous forme matricielle de la manière suivante :

$$ld = \hat{X}^{-1}.L \tag{7}$$

Où : L représente le vecteur d'emploi observé par secteur. La matrice $\hat{X}^{-1}$ est une matrice diagonale carrée où les éléments de diagonale sont composés par l'inverse de la production de chaque secteur $1/x_i$ et les zéros hors diagonale. Le vecteur de l'effet cumulatif ou total est donné par la relation suivante :

$$lc = ld'.B \tag{8}$$

Le multiplicateur d'emploi, noté Ml, est calculé comme un ratio entre l'effet cumulatif ou total (lc) et l'effet direct ou initial (ld). Donc, le vecteur des multiplicateurs d'emploi est donné par la relation suivante :

$$Ml = \underbrace{(ld'.B)}_{lc}.\widehat{ld}^{-1} \tag{9}$$

Où, $\widehat{ld}$ est une matrice diagonale carrée, les éléments de diagonale sont constitués par le vecteur (ld) et les zéros ailleurs.

En plus, on peut calculer le multiplicateur d'emploi par catégorie de la demande finale, noté My. Le vecteur Y qui représente la demande finale totale peut être représenté par la relation suivante :

$$Y_i = CF_i + FBCF_i + \Delta S_i + Ex_i \qquad \forall\, i=1, 2, \dots, n \tag{10}$$

Cette relation peut s'écrire sous forme matricielle comme suit:

$$Y = F.I' \tag{11}$$

Où, $F = \begin{pmatrix} CF_1 & FBCF_1 & \Delta S_1 & Ex_1 \\ \vdots & \vdots & \vdots & \vdots \\ CF_n & FBCF_n & \Delta S_n & Ex_n \end{pmatrix}, Y = \begin{pmatrix} Y_1 \\ \vdots \\ Y_n \end{pmatrix}$ et I est un vecteur unité

La matrice F représente une matrice où chaque colonne est constituée par une composante de la demande finale : la consommation finale (CF), la formation brute du capital fixe (FBCF), la variation des stocks (ΔS) et l'exportation (Ex).

Les multiplicateurs d'emploi par composante de la demande finale My sont calculés comme suit:

$$M_f = lf_c.\widehat{lf_d}^{-1} \tag{12}$$

Où la matrice $\widehat{lf_d}$ est une matrice diagonale où son diagonal principal est composé par les éléments du vecteur "lf_d" et par des zéros ailleurs. Et, lf_d et lf_c représentent, respectivement, l'emploi direct et l'emploi total par chaque composante de la demande finale : $lf_d = l_d.F$ et $lf_c = l_c.F$

V. Résultats et Discussions

À partir des matrices de la comptabilité sociale et des vecteurs d'emplois par secteur durant la période 2007-2012, on a calculé les multiplicateurs d'emploi pour chacune des 20 branches d'activité. Ces branches sont classées selon leurs multiplicateurs d'emplois de l'année 2012, notés Ml-12, voir tableau 4.

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Table 4 : Classement des secteurs selon leurs multiplicateurs d'emplois de l'année 2012

Secteurs		MI-12	2011	2010	2009	2008	2007	Catégorie
				rang				
D06	Raffinage de Pétrole et Autres	76,73	1	1	1	1	1	
D01	Industrie Alimentaire et Tabac	17,44	2	2	2	2	2	
D03	Industrie Chimique et Parachimique	5,28	3	3	3	3	3	I
D04	Industrie Mécanique, Métallurgique et Électrique	2,85	4	4	4	4	4	
E00	Électricité et Eau	2,23	7	9	7	9	5	II
D02	Industrie du Textile et du Cuire	2,16	5	5	5	6	7	III
I02	Postes et Télécommunications	2,02	6	7	6	8	10	
J00	Activités Financières et Assurances	1,96	8	10	8	10	11	II
D05	Autres Industries Manufacturières	1,89	9	11	9	7	8	
H55	Hôtels et Restaurants	1,85	10	8	10	5	6	
C00	Industrie de l'extraction	1,61	11	6	11	11	9	
F45	Bâtiment et Travaux Publics	1,51	12	12	12	12	12	
L75	Administration Publique Générale et Sécurité	1,40	13	13	13	13	13	I
I01	Transports	1,30	14	14	14	15	14	
K00	Immobilier, Location Et Services Rendus aux Entreprises	1,26	15	15	15	14	15	III
A00	Agriculture, Chasse, Services Annexes	1,20	16	16	17	16	16	
B05	Pêche, Aquaculture	1,17	17	17	16	17	17	
G00	Commerce et Réparation	1,13	18	18	18	18	18	
MN0	Éducation, Sante et Action Sociale	1,06	19	19	19	19	19	I
OP0	Autres Services non Financiers	1,02	20	20	20	20	20	

Source : Calculé à partir des données des TRE 2007-2012.

Pour simplifier l'analyse, on a essayé de regrouper les secteurs selon trois catégories. La catégorie I regroupe les branches d'activités qui ont gardé les mêmes classements durant la période 2007-2012. La catégorie II regroupe les branches d'activités qui ont un classement très fluctuant. Ces branches ne gardent pas les mêmes rangs durant cette période d'analyse. La troisième catégorie regroupe les branches d'activités qui changent du rang mais d'une seule position. Leurs classements restent relativement stables. Le tableau 4 montre que la moitié des branches d'activités gardent le même classement. Parmi ces branches, on trouve les secteurs de "raffinage de pétrole et autres produits d'énergie", de l'"industrie alimentaire et tabac", de l'"industrie chimique et parachimique" et de l'"industrie mécanique, métallurgique et électrique" qui enregistrent des multiplicateurs d'emplois les plus élevés durant la période 2007-2012. Par contre, les secteurs de "commerce et réparation", d'"éducation, santé et action sociale" et des "autres services non financiers" ont maintenu, durant la même période, les derniers rangs.

Pour la catégorie II, on trouve quatre branches d'activités qui enregistrent un classement entre la 14^{éme} et la 17^{éme} position. Le secteur d'"Agriculture, chasse et services annexes " se classe soit en 16éme ou en 17^{éme}.

La plupart des secteurs ont enregistré des multiplicateurs d'emploi très élevés en 2007 comme le montre le tableau 5. Les faibles multiplicateurs ont été enregistrés en 2008, 2009 et 2010. Ce qui laisse à dire que l'économie marocaine a subi des chocs suite à la crise financière de 2008.

Table 5 : Multiplicateurs d'emplois selon les branches d'activités en 2007 à 2012

Secteurs	MI-12	MI-11	MI-10	MI-09	MI-08	MI-07	Moyenne
Raffinage de Pétrole et Autres	76,73	54,75	39,04	32,04	33,54	54,34	48,41
Industrie Alimentaire et Tabac	17,44	16,46	16,35	16,23	21,17	25,66	18,88
Industrie Chimique et Parachimique	5,28	4,82	4,79	4,90	5,83	5,89	5,25

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Industrie Mécanique, Métallurgique et Électrique	2,85	2,82	2,81	2,79	2,89	3,19	2,89
Électricité et Eau	2,23	2,05	1,86	1,91	1,87	2,55	2,08
Industrie du Textile et du Cuire	2,16	2,12	2,10	2,06	2,11	2,15	2,12
Postes et Télécommunications	2,02	2,08	1,97	1,99	1,88	1,92	1,98
Activités Financières et Assurances	1,96	1,95	1,85	1,86	1,82	1,92	1,89
Autres Industries Manufacturières	1,89	1,84	1,80	1,85	1,92	2,08	1,90
Hôtels et Restaurants	1,85	1,84	1,91	1,84	2,14	2,39	1,99
Industrie de l'extraction	1,61	1,79	1,98	1,82	1,79	2,03	1,84
Bâtiment et Travaux Publics	1,51	1,49	1,49	1,53	1,57	1,65	1,54
Administration Publique Générale et Sécurité	1,40	1,36	1,38	1,49	1,41	1,43	1,41
Transports	1,30	1,27	1,28	1,30	1,29	1,41	1,31
Immobilier, Location Et Services Rendus aux Entreprises	1,26	1,26	1,25	1,26	1,25	1,32	1,27
Agriculture, Chasse, Services Annexes	1,20	1,19	1,19	1,17	1,24	1,24	1,20
Pêche, Aquaculture	1,17	1,14	1,15	1,18	1,16	1,17	1,16
Commerce et Réparation	1,13	1,13	1,13	1,14	1,14	1,16	1,14
Éducation, Sante et Action Sociale	1,06	1,06	1,07	1,08	1,08	1,08	1,07
Autres Services non Financiers	1,02	1,02	1,03	1,03	1,03	1,03	1,03

Source : Calculé à partir des données des TRE 2007-2012.

Les résultats de l'année 2012 montrent que le secteur de "raffinage de pétrole et autres produits d'énergie" a un multiplicateur d'emploi très élevé bien que l'effet cumulé est très faible, il est de l'ordre de 2,42 (voir tableau 6). Le secteur de "l'industrie alimentaire et tabac" est dans le second rang. Il crée des emplois indirects importants en comparaison avec les autres secteurs soit de l'ordre de 18,92 alors qu'il absorbe une part faible de l'emploi direct (voir graphe N°3).

Table 6 : Multiplicateurs d'emploi de 2012

Code de secteurs	Secteurs	Effet direct	Effet indirect	Effet cumulé	MI-12
D06	Raffinage de Pétrole et Autres	0,03	2,38	2,42	76,73
D01	Industrie Alimentaire et Tabac	1,15	18,92	20,07	17,44
D03	Industrie Chimique et Parachimique	0,54	2,33	2,87	5,28
D04	Industrie Mécanique, Métallurgique et Électrique	2,59	4,79	7,38	2,85
E00	Électricité et Eau	1,13	1,40	2,53	2,23
D02	Industrie du Textile et du Cuire	9,34	10,85	20,20	2,16
I02	Postes et Télécommunications	2,04	2,08	4,13	2,02
J00	Activités Financières et Assurances	1,03	0,98	2,01	1,96
D05	Autres Industries Manufacturières	5,37	4,80	10,18	1,89
H55	Hôtels et Restaurants	7,62	6,47	14,09	1,85
C00	Industrie de l'extraction	1,40	0,86	2,26	1,61
F45	Bâtiment et Travaux Publics	8,44	4,27	12,71	1,51
L75	Administration Publique Générale et Sécurité	5,07	2,04	7,10	1,40
I01	Transports	6,26	1,88	8,14	1,30
K00	Immobilier, Location Et Services Rendus aux Entreprises	1,50	0,40	1,89	1,26
A00	Agriculture, Chasse, Services Annexes	30,20	5,90	36,09	1,20
B05	Pêche, Aquaculture	7,14	1,23	8,37	1,17
G00	Commerce et Réparation	14,48	1,90	16,37	1,13
MN0	Éducation, Sante et Action Sociale	5,83	0,34	6,17	1,06
OP0	Autres Services non Financiers	46,54	1,13	47,67	1,02

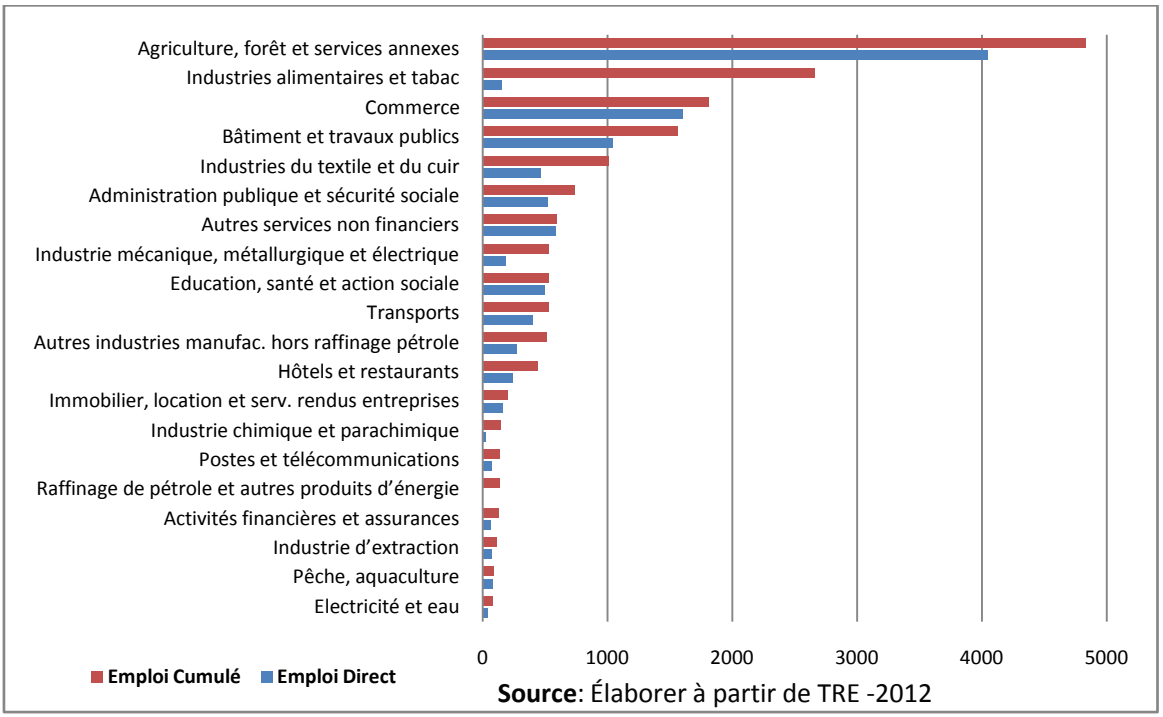
Source : Calculé à partir des données de TRE 2012.

Ce tableau montre, aussi, que la plupart des secteurs ayant des multiplicateurs d'emploi supérieur à 2. C'est le cas par exemple de "l'industrie chimique et parachimique", de "l'industrie mécanique, métallurgique

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et électrique" et de "l'industrie du textile et du cuire". Pour ces secteurs, l'emploi direct est faible sauf pour le cas du dernier secteur (voir graphe N°3).

Le secteur d'"agriculture, chasse et services annexes" et le secteur de "commerce et réparation" ont un multiplicateur d'emploi presque égal à 1 malgré que l'emploi direct soit important.



Graphe 3 : Ordre des secteurs selon l'emploi Cumulé de 2012 –Chiffres en Milliers-

Le deuxième type de multiplicateur calculé dans ce travail est celui du multiplicateur d'emploi selon les composantes de la demande finale. Les résultats obtenus sont présentés dans le tableau suivant.

Table 7 : Emploi direct et indirect par composante de la demande finale (DF)

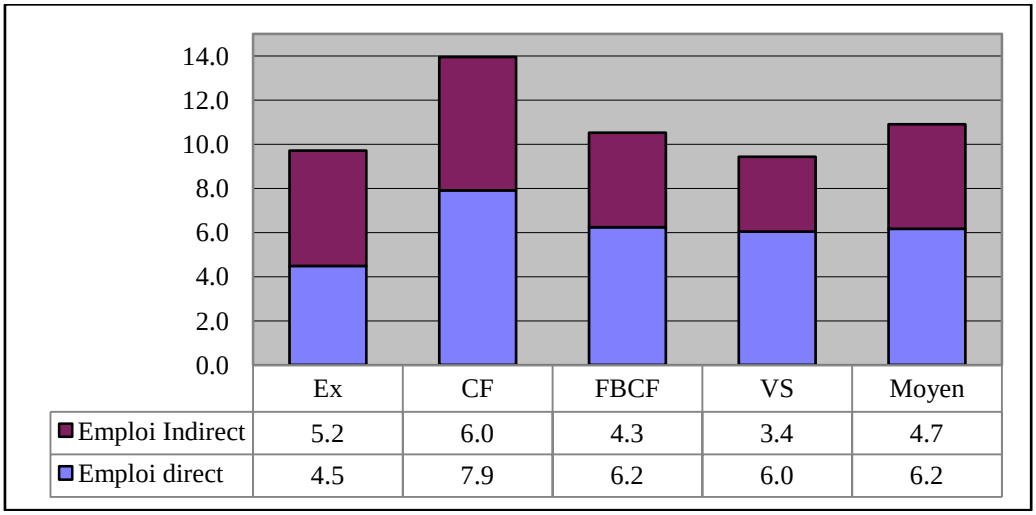
Composante de la DF	Années	DF	Emploi cumulé	Emploi direct	Mf
Consommation finale (CF)	2007	526 408	20,49	10,28	**1,99**
	2008	568 024	17,82	9,36	**1,90**
	2009	596 932	15,50	8,77	**1,77**
	2010	618 908	14,93	8,44	**1,77**
	2011	668 116	13,98	7,98	**1,75**
	2012	702 667	13,94	7,90	**1,76**
Formation brute du capital fixe (FBCF)	2007	192 573	12,85	6,94	**1,85**
	2008	227 465	11,82	6,63	**1,78**
	2009	226 177	11,91	6,91	**1,72**
	2010	234 407	11,43	6,84	**1,67**
	2011	246 394	11,07	6,69	**1,65**
	2012	258 859	10,51	6,23	**1,69**
Variations de stocks (VS)	2007	7 614	12,50	8,01	**1,56**
	2008	35 095	11,85	7,21	**1,64**
	2009	34 898	18,08	13,88	**1,30**
	2010	33 251	16,20	12,64	**1,28**
	2011	42 168	15,82	10,99	**1,44**
	2012	33 006	9,42	6,04	**1,56**
Exportation (Ex)	2007	159 679	15,99	6,86	**2,33**
	2008	201 551	12,30	5,53	**2,22**
	2009	156 701	12,92	6,23	**2,07**
	2010	196 705	11,30	5,31	**2,13**
	2011	225 755	9,82	4,71	**2,09**
	2012	238 660	9,70	4,48	**2,17**

Source: Calculé à partir des données de TRE 2007-2012

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D'après ce tableau, les multiplicateurs d'emploi obtenus pour l'année 2007 sont plus importants que ceux obtenus pour les autres années. Cette situation peut être expliquée par la crise financière de l'année 2008, l'économie marocaine a, donc, perdu des emplois après cette crise, mais il y a une légère amélioration en 2012.

La situation des emplois direct et indirect de la demande finale de l'année 2012 est représentée dans le graphique 4 ci-dessous. En effet, l'emploi direct est de 6,2 unités par millions de dirhams en moyenne, tandis que l'emploi cumulé est de l'ordre de presque 11 emplois par millions de dirhams. Le multiplicateur moyen de la demande finale est de 1,77.



	Ex	CF	FBCF	VS	Moyen
Emploi Indirect	5.2	6.0	4.3	3.4	4.7
Emploi direct	4.5	7.9	6.2	6.0	6.2

Graphe 4 : Emplois direct et indirect de la demande finale -année 2012

Source: Élaboré à partir des données du TRE-2012

Pour l'année 2012, les dépenses de consommation finale s'avèrent les plus intensives en termes d'emplois cumulés, devant l'investissement et l'exportation avec environ 14 unités par millions de dirhams. Par contre, les exportations ont un effet secondaire plus important que celui de la consommation finale et de l'investissement où le multiplicateur est de 2,17 ; alors qu'il est inférieur à 2 pour ces composantes de la demande finale.

Ces résultats montrent, aussi, que les exportations génèrent une grande quantité d'emploi, soit de 2,316 millions d'unités en 2012. L'investissement génère 3,111 millions d'unités et la consommation finale génère 9,797 millions d'unités.

VI. Conclusion

La problématique de l'emploi est expliquée par plusieurs facteurs structurels liés principalement au mode de production, stratégies adoptées dans le pays et la politique d'ouverture. L'écart entre la demande et l'offre n'est qu'une conséquence de ces facteurs. Il est toujours très important d'étudier le marché d'emploi pour trouver les bonnes solutions à la question de chômage.

Cet article s'est focalisé sur la détermination des secteurs créateurs d'emploi au Maroc parce que l'adoption de politiques sectorielles créatrices de richesses et d'emplois s'avère nécessaire pour remédier à la problématique du chômage au Maroc. En effet, il est nécessaire de mettre en place une stratégie pour la promotion de la croissance économique et la création d'emplois à travers l'investissement dans les secteurs créateurs d'emplois.

Les résultats de cette étude montrent que le Maroc doit s'orienter vers les industries tels que, les industries de "raffinage de pétrole et autres", les industries "alimentaire et tabac", les industries "chimique et parachimique" et les industries "mécanique, métallurgique et électrique" puisque ces industries engendrent les multiplicateurs d'emploi les plus élevés par rapport aux autres secteurs. Mais, cette conclusion ne doit pas nous conduire à négliger les autres secteurs spécialement le secteur BTP, le secteur de "transports", le secteur d'"agriculture, chasse et services annexes" et le secteur de la "pêche, aquaculture" puisque ces secteurs absorbent une quantité importante des emplois directs. Donc, il est nécessaire d'investir dans les secteurs ayant des multiplicateurs d'emploi très importants mais sans désinvestir dans les secteurs ayant des multiplicateurs d'emploi direct très importants.

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Land Area Limitation of Durres Port Containers Terminal

By Osman METALLA, Prof. Dr. Andrikoxhaj & Olta Nexhipi

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Abstract- A container terminal layout is usually based on various requirements for container storage and transfer. One of the most important factors that affect the performance and the output of a containers terminal is the available area of the terminal. Consequently we will discuss the potentials that Durres Port has in facing up the traffic increase in container handling as well as the limitations that exist in the land area that is available for the expansion of the terminal. There are a number of factors to be considered like port congestion, traffic management and safety aspects in the terminal. This paper after analyzing the increment of the containers traffic, gives an overall picture of various operations in Durres port containers terminal.

Keywords: *durres port, containers terminal, land area, terminal infrastructure, equipment.*

GJMBR - B Classification : *JEL Code : F69*



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Land Area Limitation of Durres Port Containers Terminal

Osman METALLA [α], Prof. Dr. Andrikoxhaj [σ] & Olta NEXHIPI [ρ]

Abstract- A container terminal layout is usually based on various requirements for container storage and transfer. One of the most important factors that affect the performance and the output of a containers terminal is the available area of the terminal. Consequently we will discuss the potentials that Durres Port has in facing up the traffic increase in container handling as well as the limitations that exist in the land area that is available for the expansion of the terminal. There are a number of factors to be considered like port congestion, traffic management and safety aspects in the terminal. This paper after analyzing the increment of the containers traffic, gives an overall picture of various operations in Durres port containers terminal.

The aim of this paper is to analyze the situation, identify the shortages that the terminal has, and draw some conclusions. Since this port is very new in containers handling operations, and the container traffic forecast is optimistic, there are a number of issues to be addressed in order to make the Port of Durres an adequate port, able to handle the containerized cargo in the future, as well as to be a competitive port in the region.

Keywords: durres port, containers terminal, land area, terminal infrastructure, equipment.

I. Introduction

Port of Durres represents the main interface of the Albanian intermodal trade and serves as the gateway of Albania. Being just 40 km from the capital, Durres port has a very strategic position regarding the integrated European transport corridors, making cargoes and passengers move easily to the center of European continent.

The port actually serves 79% of Albanian imports and 88% of exports, or 85% of all seaborne cargo that go from/to Albania, goes through this port. Containers business is a new one for the port of Durres.

This port started to handle containers about e decade ago, when first boxes started to appear, and the first container stocks started to be built. Initially the port could handle just a few hundred of boxes. The handling of containers was not done with specialized containers equipment, but with conventional cranes, therefore the ships used to suffer unjustified delays and the port was not preferred from container shippers. This situation continued for first three years until the port realized that the container traffic had strong increasing tendencies. This appealed for more specialized equipment, and first reach stackers and spreaders were purchased. The port realized that the new equipment, changed the way the containers were handled, increasing efficiency, minimizing damages and increasing operations safety. Therefore, the port and the private container operator have undertaken several investments in order to improve the overall performance of the port. A number of containers handling equipment such as reach stackers with lifting capacity of 40 tons, forklifts, with lifting capacity of 35 tons, a considerable number of tractors and chassis for moving containers have been acquisitioned. Actually in addition to the existing mobile crane, the private operator has brought the second mobile containers crane with a capacity of 120 tons. The terminal is lacking a gantry crane, which for the existing wharf conditions seems impossible. Because of this, as well as the global trend on container business, the volume of the containers handled in this port/terminal, has been increasing significantly from year to year. Because of this continuous augmentation of the containers traffic, the terminal is reaching its handling and storage capacities because the land area of the terminal is limited.

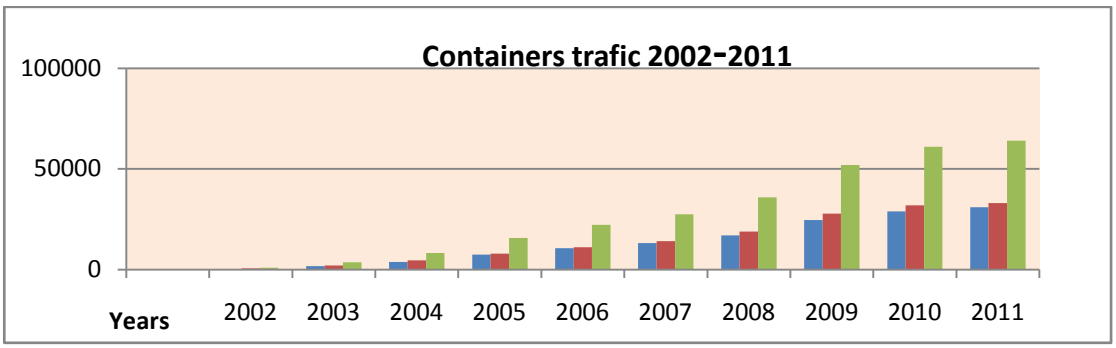
II. Container's Terminal

Containers business is a new experience for Durres Port and it have a short history in handling them. Until 1996, only a very few 20 feet containers could be handled in this port due to the lack of proper infrastructure. The containers used to were handled through conventional loading/unloading gears and the operations were not safe. Actually Durres port Authority is managing the new containers terminal, which is capable of handling all types of containers from 10 – 45 ft. It started as a start up containers terminal, just to face the growing traffic. This terminal actually is being operated by a private operator, which is working under a concession contract. Container ships are being handled in wharfs 6 & 7, which have an overall length of 465ml and a backup area for storing containers of 60.000m^2. This area is being congested and the operator is frequently asking for contracting additional port spaces from other operators of the port. The following graph gives us an overall picture of the containers handled in this port during the last 10 years.

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Figure 1 : Container's traffic in Durres Port during years 2002 – 2011



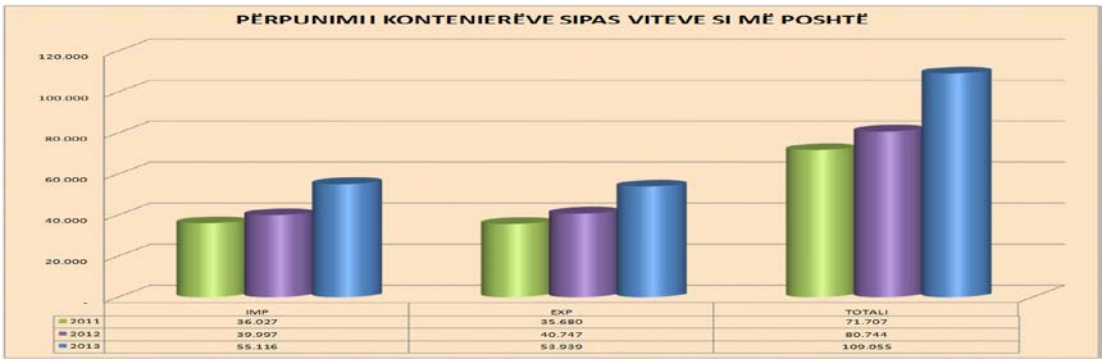
Source: Durres Port Authority

As it can be seen from this graphic, the traffic of containers has been in continuous increase from the start of this business in the port of Durres and on. In order to have a clearer picture of the traffic of containers in Durres port in the last three years, we have referred to the statistics of the Durres port for these years. The following graph in figure 2 shows the significant containers traffic growth for the years 2011 – 2013.

The continuous growing containers traffic is putting the terminal in a difficult position because the terminal is reaching its limit capacities. During years 2005 – 2009 the traffic growth was 140%. During the last years the effects of the global crises have affected the volume of the traffic in the port as well but it should be noted that the containers traffic still marked annual growth of 5%. The construction of the road axes from Durres to Pristina and further to Nish, created another possibility for Durres port to expand its hinterland and offer its services to Kosovo and further to Serbia.

The following figure 2 shows the containers traffic during years 2011 – 2013, which are considered as the years of the crises.

Figure 2 : Containers traffic in Durres Port during years 2011 - 2013



Source: http://www.apdurres.com.al

As it can be observed from figure 2, even during the period 2011 – 2013, the volume of containers has continued to increase and this demonstrates that containers are the future of this port. Considering that nowadays almost everything is shipped into containers, it means that in the future this terminal will handle the most part of the cargoes that comes/goes to/from this port.

III. Traffic Forecast

The main macroeconomic indicator used in forecasting the traffic in Durres Port is the Global Domestic Product (GDP). For this reason in the following table 1 we have given the values of the GDP during the last years.

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Table 1: DGP 2000 - 2013

Year	2000	2001	2002	2003	2004	2005	2006
DGP in millions ALL	523,043.4	583,368.6	622,710.8	694,097.2	751,021.6	814,796.7	882,208.8
Year	2007	2008	2009	2010	2011	2012	2013
DGP Millions ALL	967,670.0	1,089,293.1	1,151,019.	1290350,1	1300624,0	1322811,0	1350554,8

Source: Bank of Albania- Statistical Report April 2015

For the purpose of this paper we have taken into consideration the traffic forecast up to 2030. Considering the annual tendency of the GDP growth we have assumed an average annual growth of 3,5%. To observe the relationship between GDP and seaborne cargoes handled in Durres Port, we have taken into consideration the volumes of cargoes for the following years 2000 – 2013 as they are shown in table 2 below.

Table 2 : Cargoes handled in Durres Port 2000-2013

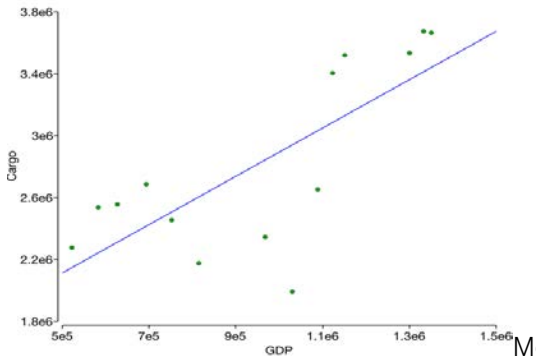
Year	2000	2001	2002	2003	2004	2005	2006
Cargo	2279897	2538826	2565116	2686979	2454243	2174347	2345433
Year	2007	2008	2009	2010	2011	2012	2013
Cargo	1991100	2654387	3521265	3406283	3526114	3673857	3663628

Source: Durres Port Authority, Statistical Department

The volume of cargo during years 2007, 2008 is lower than the normal trend due to the fact that handling of liquid bulk cargoes was transferred to the new oil port north of Durres.

In this table Considering GDP as an independent variable and cargo volume as a dependent variable we have calculated the correlation that exist between these two variables, as shown in the following graphic 3.

Figure 3 : The correlation between cargo and GDP



Model

Cargo=b0+b1*GDP

Correlation Coefficient=**0.743**
R Square=0.552
Covariance=128744807041.879

Parameter Estimates

Term	Estimate	Std. Err	t	p-value
b0	1330434.118	403154.023	3.300	0.0063
b1	1.5640	0.406	3.848	0.0023

Source: Calculated with StatViz

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This graph indicates that there is a positive correlation between GDP and cargoes handled in the port of Durres. The correlation coefficient is 0,743, which shows a great significance.

Referring to the master plan of Durres Port there is a traffic forecast up to 2030. The company Royal Haskoning, which prepared the master plan, has applied the same correlation to forecast the traffic volume for the port of Durres. Although the general trend is to include almost every cargo in containers, there are still some cargoes that can't be containerized. To express the share of the general cargo that can be transported by containers we can use the equation:

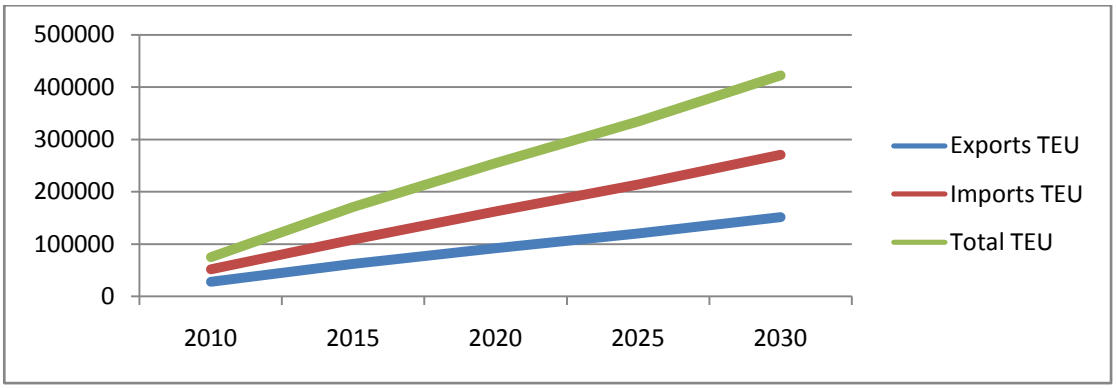
$$\frac{Gc}{Tc} = \frac{ContGc}{ContC} \; x \; \frac{ContGc}{TC}$$

Source: Royal haskoning, Durres Port Masterplan

Where: Gc – general cargo
Tc – total cargo (cargo volume)
ContGc –containerized general cargo
ContC – containerized cargo

The left side of the equation is referred as the containerization coefficient. This coefficient for Durres port is 0,33, which means that only 33% of all cargoes that are handled in the port of Durres are containerized cargoes. This figure indicates that there is still a lot of room for the future cargoes that come/go to/from port of Durres to be containerized. Based on the calculations done the total containers traffic in 2013 for Durres Port is forecasted to be 270.000 TEU imported containers and the combined figure for Imports/exports will be over 422.000 TEU. Figure 4 shows the traffic forecast for Durres Port up to 2030.

Figure 4 : Traffic forecast for Durres port (2010 – 2030)



Source: Masterplan of the port of Durres (Europeaid 122348/C/Serial)

The actual statistics show that the containers traffic in Durres port has been slightly below the forecast. During 2013 the number of TEU handled in this port was 109.055 TEU while the forecast for 2015 is 171.146 TEU. This subtle deviation from the forecast is due to the global financial crises, which extended its effects over the Albanian economy as well.

IV. Terminal Needs for Storage Land Area

In order to calculate the storage area of containers we have to consider the dwelling time of containers and other performance indicators of the terminal. As it was indicated by figure 2 above, the number of TEU handled during 2013 was 109.055, and this figure is continuously increasing. The total area available for the containers terminal is 60.000m^2, which is at the very end limit of the terminal capacity. Considering the usage factors of the terminal areas, such as equipment needed area, dwell times 13 days (exports 6 days, imports 7 days), yard occupancy factor 0,75, and peak factor 1,3 we can calculate the needed storage area as follows:

$$110.000 \; x \; \frac{13}{365} x \; 12m^2 x \; 1{,}3 \; x \; \frac{1}{0{,}75} = 45{,}838m^2$$

It is obvious that the required land area to handle 110.000 TEU of 46.000m^2 is so close existing storage area of 60,000m^2 that is required for a normal operation of the terminal. Referring to the traffic forecast, in 2015 the forecasted traffic is 171.146 TEU. As we mentioned above the real figure might be a bit below that figure, let assume 150.000 TEU. The question is: *How much land area do we need in order to handle 150.000 TEU*? Using the above equation and assuming that the dwell time of containers, yard occupancy factor and peak factor, the area needed in order to handle 150.000 TEU is about 63.000 m2. That means that the containers terminal is in its limits and future increase of containers traffic will create congestion, and other delays. Considering the additional limitations that the terminal has, it makes it very difficult for the terminal to further increase its handling capacities beyond these figures if no further steps are taken in order to increase the storage and handling capacities of the terminal. In the above calculations we have assumed the dwell time, yard occupancy and peak factors. This situation appeals

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foranswers relating the needs that the terminal has for storage areas.

The terminal of containers in Durres port has two ways of increasing its handling capacities in order to respond in a positive way to these traffic volume tendencies:

- The first one is to further improve terminal infrastructure as well as the operations performance
- The second one is to increase the mobility of the containers from/to the terminal through modern road and railway network system.

Considering the first option port/terminal has to improve operational indicators such as berth occupancy rate (BOR) as well as labor utilization rate (LUR). Both these indicators can be calculated by following equations:

$$\boldsymbol{BOR = \frac{hrs\ x\ meters\ used}{(available\ hrs\ \ x\ available\ meters) x\ 100}}$$

$$\boldsymbol{LUR = \frac{service\ time\ in\ port\ (hrs) x\ workers}{(available\ hrs\ x\ workesr) x\ x100}}$$

In order to increase the storage capacity of the containers theoretically the operator should store the containers as high as possible (up to equipment allowance), but in the case of this terminal, the loaded containers can not go higher than three, and empty containers not higher than four. This is due to the characteristics of the terminal ground.

During the last years the terminal has done a notable progress in improving its performance indicators but again the terminal has some limitations such as:

- The entrance channel of the port and the depth of the water in the quayside doesn't allow the berthing of ships with draft over 8,2m,
- The ground characteristics of the terminal do not allow for higher storage of loaded containers than three rows and empty ones higher than four rows.
- The rail spam dos not allow the installation of a gantry crane
- The port doesn't provide for further terminal area expansion
- The terminal operations are not automated.
- For the moment there are no ongoing works on expanding terminal storage areas, or building other storage areas near the port, therefore, if no further steps on improving capacity in order to accept the coming cargo, the port will not be able to respond to these increasing container traffic in the future.

V. Future Developments

Analyzing the present situation of the port of Durres and containers terminal, as well as the associated infrastructure, it is easily notable that this port needs to have a clear vision on how to improve its handling capacities and overcome the limitations it is facing. Looking at the investments that are done in the port, it seems that the areas where the port/terminal have room for improvement are as follows:

First, the port should improve the dwell time of containers in order to have a better efficient use of the terminal area. If the dwell time will be cut down from 13 to 11, or further to 10 days, the terminal area requirements will be as following:

$$110.000\ x\ \frac{12}{365} x\ 12m^2 x\ 1{,}3\ x\ \frac{1}{0{,}75} = 42{,}313m^2$$

$$110.000\ x\ \frac{11}{365} x\ 12m^2 x\ 1{,}3\ x\ \frac{1}{0{,}75} = 38{,}786\ m^2$$

$$110.000\ x\ \frac{10}{365} x\ 12m^2 x\ 1{,}3\ x\ \frac{1}{0{,}75} = 35{,}260\ m^2$$

As it can be seen from the above equations, if we can cut down the dwell time from 13 days to 12, or even 10 days, theoretically we can reduce the area requirements for container storage from 46,000 m2 that we need today to 35,000 m2. That makes the port more flexible and creates the opportunity for a more intensive and efficient usage of the terminal area. In order to achieve this, it is necessary that the mode used for the movement of the containers from port to the destination and vice versa, should be very effective. Today the only mode used is the one through chases and tractors. This method is costly, slower, and causes a lot of road traffic consequences such as traffic congestion, pollution, road damage, noises etc. the lack of rail link of terminal with rail network make it very difficult to cut down dwell time of containers. Therefore, this cut down of the dwell time seems out of the reality considering the present situation of the port overall infrastructure.

Second, the terminal should think of establishing other storage areas out of the port in order to increase the storage capacities. Free zones or logistic parks are another possibility of increasing terminal handling capacities.

VI. Conclusions

This paper underlines the importance of the land area requirement of a containers terminal. In analyzing the case of Durres Port we observed that this port is reaching its capacity handling and storage limits.

Lacking of rail link with containers terminal, and the overall poor conditions of Albanian railway network, its weak connections with network beyond Albanian borders, affects the performance and the productivity of the terminal and therefore the question of the land use v/s land area available becomes very important.

Terminal area limitations, and difficulties for terminal area expansion is another factor that creates

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restrictions for the container handling capacity. The operator should identify other possibilities in order to build distant container yards in order to increase the storage capacity.

Improving the navigational capacities of the port such as deepening the access channel, basin and the quaysides will make it possible for the port to accommodate bigger ships and this will result in bigger throughput for the port but without resolving the issue of land needed in order to face the increasing forecasted future containers traffic, this investment will not achieve its expectations.

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3. Submission of Manuscripts,

4. Manuscript's Category,

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24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.



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27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.

Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.



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Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript--must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.

- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
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Procedures (Methods and Materials):

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



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Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.

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Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX

A

Abdulaodir · 2
Abiambola · 8
Amajiri · 1, 2
Anumuda · 8

B

Bastardized · 2, 4

C

Caractéristiques · 24, 25
Chinwokwu · 8

D

Danfodio · 6
Durres · 1, 37, 38, 39, 41, 43, 45, 46, I

I

Increasea · 6

K

Karatun Boko · 4

L

Luminophors · 16

M

Métallurgique · 22, 26, 27, 31, 32, 33, 35

O

Okonkwo · 3

Q

Quaranic · 3, 4, 8

R

Rudenskiy · 11, 20

T

Tsangaya · 2

U

Ukrayinska · 20





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