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Research on the Introduction and Cultivation of Top-shelf Talent in China

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Abstract- This article summarizes the generalizations of high¯level talent introduction and cultivation at home and abroad. combined with the current situation of China's high-level talent introduction and cultivation, This article points out and analyzes some problems in the current high-level talent policy and implementation process, such as the introduction of the program is not sufficiently standardized, laws and regulations relative lag, high-level talent distribution and development of the industry requirements inconsistent supervision, management mechanism behind and so on, and then propose a series of measures to innovative high-level talents introduction and training.

Keywords: *high-level talent; reverse flow; risk prevention*

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Research on the Introduction and Cultivation of Top-shelf Talent in China

Yong Du [α], Jun Du [σ] & Bo Yan [ρ]

Abstract- This article summarizes the generalizations of high-level talent introduction and cultivation at home and abroad. combined with the current situation of China's high-level talent introduction and cultivation, This article points out and analyzes some problems in the current high-level talent policy and implementation process, such as the introduction of the program is not sufficiently standardized, laws and regulations relative lag, high-level talent distribution and development of the industry requirements inconsistent supervision, management mechanism behind and so on, and then propose a series of measures to innovative high-level talents introduction and training.

Keywords: high-level talent; reverse flow; risk prevention.

I. The Profile of Domestic and International Research

At home and abroad, many scholars, government agencies and entrepreneurs conducted in-depth study and exploration on the high-level talent management issues, have draw some useful conclusions, in which there are some following points on the treatment of specific issues about how to introduce and cultivate top talent:

a) Foreign introduction and cultivation of high-level talent Study

American scholar Schultz pointed out the improvement of human capital plays more important role than economic growth on physical capital growth, and established the important role of human capital in his presentation of the "human capital investment" as early as December 1960, the 73rd Annual Meeting of the American Economic Association. The introduction of talents plays a key role on the economic development in the past two decades. The U.S. government introduce talents in the following ways: relaxing immigration restrictions of access to technical talent, increasing work visa quota to professionals, establishing science and technology back-up team relying on students returned from America, and employing the foreign experts and scholars and so on. The formation of the U.S. Silicon Valley high-tech talent circle can be regarded as a model for the introduction of international talent. In 1996, the Singapore government set up a "Network station of Singapore employment agencies", which provided a platform for the elite talent throughout the world to display their talent. This allows Singapore to recruit 7500 talents, including scientists, researchers, and other professional skilled people. Professor Scott (2002) at Cornell University believes that high-level talent based on the promise of human resources management system, emphasizing employees' loyalty to the company. And he also pointed out that establishing a solid "psychological contract" with high-level talent through fully authorized, of shares, stock options, employee stock ownership or pension plans, etc. Jack (2005) study the talent management system such as IBM, Marriott, and found that the stability of the tower structure and flow of internal talent market is very important for the sound corporate, its personnel management practices is taking a long-term nurturing through the Bench, (bench) plan, G100, (Generation 100) talents Scheme, the internal transfer rotation and other methods, and then make the top talent into their specific human capital. The Japanese government attracts foreign students by offering preferential terms, purchase or annexation of foreign enterprises or companies, and then habitat the top talent for himself. They also engaged in "scientific tourism" and built companies in a foreign country to take advantage of global talent. Moreover, they entrusted with the task of high-tech talents, celebrities, management and industry experience rich, so that they can make every effort for Japan's economic development and technological advancement.

b) Domestic Introduction and Cultivation of High-Level Talent Study

Since the reform and opening up, China insists on the principle of "respect knowledge, respect talent", actively implement the national rejuvenation through science and education and the human resources strategy. The Third Plenum of the party stressed to be people - oriented and establish the scientific concept of development. The "Decision" in the Central Talent Work Conference clearly pointed out implement the country with talented people strategy to speed up the pace of overseas talent from overseas. In recent years, the international war for talent, cities across the country have been put forward a series of talent introduction policy. Such as Sichuan built "overseas talent pool" and "overseas project library", and there are 1500 overseas talent was selected; Tianjin overseas recruitment

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missions went to the United States in New York and San Francisco to recruit senior personnel; In Liaoning province, the government launched the "high-level talent membership card, so that senior personnel has a " home "; In Shanghai province, they established a government special fund for the implementation of the construction of an international talent highland Plan, and there is a huge capital investment each year to support the overseas talent to work and venture in Shanghai; In Beijing, the government regard attracting and making good use of study personnel as the implementation of capital development strategy, strengthen the policy and environmental advantages, and build the city's Pioneer Park network by focusing on building Pioneer Park and Venture carrier. In Jiangsu province, they focus on the implementation of talent internationalization strategy, developed and implemented high-level personnel plan such as the introduction of the ten thousand students studying overseas for five years, and opened six talents of peak project-oriented for overseas, so that they can attract high-level overseas talents with eagerness, preferential policies and quality services, RenjingJun (2007) the director of high-tech zone in Xi'an think we must attract, cultivate and retain high-level talent. If we want to make a combination of attract, train and retain the high-level talent, and have the ability such as boldness of recognize the talents, the feelings of cherish the talents and the way about gathering the talents, on the one hand, we should have to raise the awareness of enterprises, introduce and feel free to make use of talents; on the other hand, we should help businesses to improve the management mechanism and create a harmonious working atmosphere, and prepare for make use of outside the brain to strengthen cooperation with the firm of management consultants and training companies, and then help enterprises to improve their management level.

Throughout the various measures of the introduction and cultivation of high-level talent at home and abroad, we can find some common trends: A) high salaries to attract talent and create a good working environment; B) the way of talent mobility varies from the "rigid flow "to the "hardness and softness"; C) unscrupulous compete for talent, including through the generous pay and benefits, comfortable office environment, high-level job title, fully authorized, participation in decision-making, given the challenging work, learning and training opportunities, encourages entrepreneurship, well-developed career planning and other measures, in order to attract and retain high-level talent. We can learn from the means and manner of the introduction and cultivation of talent.

II. The Current Situation of Chinese High-Level Talent Introduction and Cultivation

In recent years, many local governments have issued some policies and measures for the introduction and cultivation of high-level talents, such as "the regulations about introduce senior software talent's preferential policies", "the Rules about the implementation of preferential policies to the introduction of talent", "the notice about encourage overseas high-level talents studying abroad return to work", "the decision on the further optimization of the talent environment", etc. The implementation and enforcement of these policies makes local governments achieved some encouraging results in the high-level talent introduction and training, and talent development environment also has been further improved and optimized. At the same time, however, the current high-level human resources policies and implementation process still exit some problems and defects, as follows:

a) High-level talent introduction work program is not sufficiently standardized and scientific

Most of experts around introduced by government-leading, introduced by the non-profit foreign expert organizations are less than that, and through market intermediary channels is the least, and the short-term employed experts is more than the long-term employed experts. Moreover, there is a big gap between the wages of foreign talent and the international market price. In addition, with the intensification of international competition, the government pays more attention to the protection of the senior personnel both in developed and developing countries when attracting foreign talent, but the combination of these two works is not satisfactory. How to link China's domestic and international talent market and the demand for talent is not very clear. What industries, what types of personnel need to recruit the international talent and how to link up the two works also require careful study. The problem how to create a good working and living conditions after the introduction of qualified personnel and how to effectively develop their talents also worth exploring.

If we haven't made in-depth analysis about whether the introduction of talent is the professional or technical talent, the talent can't show their ingenuity in a specific working environment.

b) The introduction of laws and regulations of international talent is lagging behind

At present, in addition to a small amount of local laws and administrative regulations make provision for the introduction of international talent; China is still exits a law or administrative regulations to make clear specifically on how to use the international talent.

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Although published "opinions to encourage overseas high level talents studying abroad to return to work", but its main purpose is to appeal other people. For example, how to implement continue to create conditions to attract overseas talent, and focuses on the material living conditions and the recommendations on employing is still a problem. Substance treatment is necessary, but the key is to implement and create a good, interactive, cooperative, coordinated and healthy legal environment, work environment, human environment. International talent, especially talent from developed countries' awareness of the law is very strong, if the legal environment in China is incomplete will make them discourage the Chinese market. As soon as public and legalized policy for the introduction of international talent, and provide legal protection for work in China's international talent is the primary challenge on the process to attract intellectual in China.

c) The distribution of high-level talent and profession development the request does not coordinate

In order to attract the best talents and the growth of talent, we need to have an platform for exchange and development, especially high-level professionals need to have suitable housing units, jobs and working conditions. In many regions the carrier is not enough to attract top talent, leading to the ability of absorbing and carrying is low. According to statistics in 1999, Chinese employees with college education accounted for 3.5%, while Chongqing city accounted for only 1.4%, not only under the average of 6% in eastern area, but also exits a large gap compared with the western region such as 3.2% in Shanxi Province, 2.5% in Sichuan Province and 2.2% in Guizhou Province. This is reflected in the following points: First, due to limited preparation at agencies and institutions, the space and capacity for talent is very small; second, since the research institutes, large enterprises and high-tech enterprises is not enough, the platform to attract talents is relative inadequate; third, the R & D center in enterprise is not enough, Especially, in some large and medium-sized cities, more than half of the introduction of high-level talent concentrated in the organs and institutions, especially culture and education of health professionals accounted for the larger proportion. The introduction of high-level talent on literature and history is relatively abundant, while the much-needed foreign trade and economic cooperation for economic development, information engineering, foreign language, urban construction and planning, legal aspects of high-level talent is still relative insufficient. Education, health and economic accounting talents have accounted for the most part in the city's professional and technical talents, but engineering talents are in short supply, which can not meet the needs of enterprises, showing a gross mismatch between the high-level talent distribution and development of the industry.

d) The problem about the reverse flow of high-level talent is serious

With the rapid development of economic globalization, the pace of globalization and scale of the flow of talent has reached alarming proportions, especially in high-level talent; and it has formed a pattern without national borders. But China is in a weak position in the competition for high-level talent. In addition, facing the foreign excellent conditions, the foreign companies prone to the problem of talents reverse flow. Among the returning professionals, the loss is basically the elite, but the return talent's quality is difficult to guarantee and the number has been remarkably reduced. Shortage of key talent have a global convergence, that means what we are indispensable is also what people indispensable. For example, China's large talent gap such as modern communications, bioengineering, computer chip manufacturing and software design and other high-tech talent; talents familiar with the international financial and WTO rules; complex talent not only understood business but also understood management, in developed countries also at a shortage. The comprehensive competition around the globe for information technology, biological engineering, international finance, commerce, business and other talents led China to dilemma that the inadequate talents may taken away. Not long ago, a company in the United States published a list of more than 2,000 senior personnel of Chinese financial sector, which details the suitable positions of each senior personnel, and combined with the employer, the company often give them higher vocational, high-paying, high-equity and other extremely allure offensive. These cause the problem of Chinese top talent reverse flow more serious.

e) The Supervision And Management Mechanism Of The Introduction Of Talent Is Fall Behind

Most of the units in China, human resources management development system is in transition, and advanced talents incentive and restraint mechanisms is far from being established. It is a challenge to the employing unit how to make good use of the international talents to adapt the organizational culture of the employing unit. If the employing units haven't followed the laws of modern human resource development and management, they will miss the opportunity in fierce competition for talent. There are two critical process in organization when develop and manage human resources, one is configuration in place, the other is to "develop a color", "Developed a color" is to provide a good institutional environment of development and management for talent performance. At present, the organization introduced talent has recognized the importance of the construction of these systems, and gradually change the traditional personnel management system, introduce and improve the new personnel management system. Configuration of human

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resources is the premise of its development, but human resources configuration in place are far from to do, or simply did not arouse the attention of the parties concerned. The work that human resources should in right place is far away from the target, and interested parties even haven't draw attention to it.

The existence of the above issues seriously restrict China's economic and social development, so it is necessary to innovative the policies and measures of introducing and cultivating high-level talents.

III. The Measures about Innovating Chinese High-Level Talent Introducing and Training

a) To Establish Analysis and Forecasting System of Scientific High-Level Talent Demand

In order to reasonably plan the hierarchy of the various types of high-level talent, and make high-level talent distribution structure to comply with the requirements of the development of the industry, the government should introduce and perfect policies and regulations related to the introduction of international talent, and develop a good international talent introducing institution environment. In addition, they also should carry out scientific and rational analysis and forecasting of high-level talent demand. The analyzing and forecasting of high-level talent needs be based on the various regions, various industries, the development prospects of the organizations, organizational skills, job requirements and other various factors including macroeconomic factors such as economic, political, social and microeconomic factors such as organizational strategy, the operating conditions, management level, to estimate and analyze the type of high-level talent (including quality and quantity) required in the future. At first, this requires we must know the organization's development strategy, and consider what kind of people can achieve organizational goals, whether there are enough people to implement the organization's goals. Secondly, we should analyze a variety of factors what effect on the high-level talent needs. In this analysis, we mainly make use of this tool of work analysis to analyze the content, characteristics, work environment and work itself of the organization work, and then summarize the quantity and quality of the high-level talent in various positions that we need on the current organization. Finally, we collect the quantity and quality of the same type of high-level talent and form talent needs analysis and forecasting report.

b) To Improve the Social Evaluation Mechanisms of High-Level Talent Introduction and Training

It allows us to authenticity and to prevent some errors in the process of introducing high-level talent that establish and improve the social evaluation mechanism. Such as Tsinghua University requested outside peer to do review, because it is outside with independent, so it can avoid the obstacle of the sensibilities at least. In addition, there is no nepotism, dark psychological such as "Wu dalang shop" (they fear of someone higher than himself, so they only leave the "dwarf") and conflict for interest. This will ensure objective and impartial. At the same time, they are the peer after all, and they have some understanding on the frontier disciplines and academic trends, and can identify the truth and false of the academic achievements of the council people, and test their academic content. On this basis, no matter the leadership finalized or collective discussion, we have a "lung"; professional in the personnel department had survey the details through the "third eye" perspicacious in the process of the introduction of procedures. In the process of establishing a sound social evaluation mechanisms should draw attention to the background checks of high-level talent. Background investigation is to collect data from various sources, including vocational proof of previous work and educational status, personal identity, criminal records, civil litigation, employee compensation records, credit records. But we also should confirm and check the elements such as the identity card number, social security number, etc. If it is possible, you should also understand the "living material" of the article documented. In the background investigation, you may encounter some resistance and obstacles. Such as former employers may be reluctant to provide truthful information, even some investigators may be charged with the risk of invasion of privacy or defamation laws. Because of legal security, the employer may require job applicants to sign the declaration of a power to allow background checks. But, no matter what difficulties they will encounter in the background investigation, the employers have no choice but to do it. If you do not have enough manpower, you can use the specialized services of a professional review body. This is an important part of the society evaluation mechanism.

c) To Establish Channels of Domestic and International Talent Market Share of Human Resources

It is learned that in order to encourage domestic talent from overseas and enhance trust of the use of foreign talent, the State Administration of Foreign Experts Affairs is to accelerate the pace of the qualifications for licensing the foreign talent agency and recruiters. Currentlythe number of certified foreign expert organizations is 69, and abroad (Habitat) training institutions is 258. Moreover, the State Foreign Experts Bureau also plans to take effort to extend the number of the talent pool of state-level overseas talent pool of resources to 80,000 for two years. However, attention should be paid to the problem that market mechanism plays an active role in resolving the contradiction between supply and demand, and strive to establish the international talent market system in line with international practices with Chinese characteristics as soon as possible. It is necessary to closely co-

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coordinate the employer and the talent market, the market of domestic talent and the linkages of international talent market; to establish new partnerships with foreign talent agency and recruiters.

d) To Establish a Perfect Risk Identification and Prevention System of High-Level Talent Introducing

The false introduction of talents accidentally is the main reason of staff conduct risk. In the recruitment process, job seekers and enterprises in the situation of asymmetric information, job-seekers know the requirements of the employer, however, the enterprises know little about the personal circumstances of job seekers, they can determine the job-seekers' personal conduct only through resume and interview performance, and job seekers can pass the test through the camouflage, impression management, as well as to conceal under false pretenses, even worse, some of them do not meet the requirements of the company conduct job-seekers, but they do not believe their conduct problems. Therefore, we need to establish a perfect risk identification and prevention system of high-level talent introducing. Specifically, before the introduction of senior personnel, the enterprise should consider whether the environment and conditions can give full play to the high-class talent to the business, including the institutional environment, cultural environment, resources and so on. Critical aspects should follow systems and processes running, rather than the person's direct personnel placement by the boss or the boss battle. In the process of the introduction of senior personnel, the enterprise should consider whether they can take the risks of its high cost and failure or not, and make an accurate measurement of the various costs in the process of introducing, establishing special funds for the introduction of high level talent. After the introduction of high-level talent, companies should give competitive in vocational high salaries, options, and other favorable conditions, to prevent brain drain and the occurrence of the phenomenon of talent reflux. And the company should establish database of high-level talent flow and reserves, in order to adjust and supplement for the brain drain of vacancies in important posts.

e) Increase Efforts to Develop the Introduction of High-Level Talent

Once companies introduced the high-level talent, they should intensify efforts to develop the high-level introduction of talent in order to let high-level talent, knowledge, skills, advantages run well, to make it localization, organization as soon as possible. Therefore, governments at all levels accord to the various policy and regulations issued to guide microstructure introduction. Except using general outside talent, for the national strategy field, industry which need advanced strategic talents, the government should not only directly involved in talent demand analysis, introduction, but also through the establishment of corresponding research institutions or national key laboratory. Moreover the government should also help build new corresponding team with the necessary management talents and all kinds of auxiliary talents, ensure sufficient scientific research outlays and operation of funds, and avoid unnecessary from distraction outstanding professional and technical personnel, in order to ensure the team operate efficient.

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Research & Development as a Strategy for Survival in Mexican Companies

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Abstract- The aim of this paper is to analyze the processes of adaptation and survival of companies in Mexico to compete in increasingly demanding markets, that create uncertainty them. In this context, some companies have decided to develop adaptation strategies through research and development (R & D). This study, being exploratory, provides empirical evidence on what factors (internal and external) leading the entrepreneurs to assess the implementation of R & D in their companies.

Keywords: research, technological development, innovation, strategy, adaptability, survival.

GJMBR-B Classification : FOR Code:150304 JEL Code: O32, M21, L25

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Abstract- The aim of this paper is to analyze the processes of adaptation and survival of companies in Mexico to compete in increasingly demanding markets, that create uncertainty them. In this context, some companies have decided to develop adaptation strategies through research and development (R & D). This study, being exploratory, provides empirical evidence on what factors (internal and external) leading the entrepreneurs to assess the implementation of R & D in their companies.

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Resumen- El objetivo de estetrabajoesanalizar los procesos de adaptación y supervivencia de lasempresas en México al competir en mercadoscadavezmásexigentes, lo que les genera incertidumbre. En estecontexto, algunasempresashandecididodesarrollarestrategias de adaptaciónmediante la investigación y desarrollo (I+D). Este trabajo, aunque de carácterexploratorio, aportaevidenciaempíricasobrecuáles son los factores (internos y externos) quellevan al empresario a valorar la implementación de la I+D en susempresas.

Palabras Clave: investigación, desarrollotecnológico, innovación, estrategia, adaptabilidad, supervivencia.

I. Introduction

Mexico faces major challenges in the area of science and technology. In this regard, although it has implemented policy instruments aimed at improving the conditions for conducting scientific research and technology transfer, the results so far have neither been what it has been expected nor necessary for Mexico to achieve a development to become more competitive and therefore to have improved the living conditions of Mexicans. The Mexican country ranks last in investment for research and development in relation to gross domestic product among the member countries of the Organization for Economic Cooperation and Development (OECD). Furthermore, it is disappointing that there are no indications that this may improve in the short term.

As in other countries, in Mexico the main actors in the development of production processes and technological innovation are the companies. However, this does not mean they should conduct themselves technological developments from start to finish. On the contrary, knowledge and skills that build businesses rely heavily on their internal possibilities to use technology and knowledge developed within the country or elsewhere. In addition, some of the technology and production processes are often developed by the research areas of universities and research institutes of the public and private sectors.

Entrepreneurs and their leaders have in mind that a bad strategy can make the difference between staying and leaving the market for their products. All organizations are vulnerable to changes that occur in their environment, especially the cycles and transitions of economies, market crisis, and technological change, financial speculation of the large conglomerates and regulations and institutional structure countries. Some companies cannot change their structures fast enough to adapt to changes in volatile markets.

Importantly, not only the decisions of employers and agents influence the survival of businesses. There are other factors also determinants, such as company size, seniority, training or education of their staff, the direction toward innovation, reactive or proactive strategic approach, and the centralization of decision making and the level of formalization within the organization as well as the barriers to innovation.

It has been postulated that the strategic and organizational adaptation companies is a critical capability for the sustainability of the organizations in a changing and competitive world.

The search for scientific explanations for the longevity and performance of enterprises has been a constant concern for specialists in the field. They wonder how it is that a stay or survive, while others disappear, and why only a few manage to stand out from most recently created and some come to displace other already established.

II. Theoretical Background

The accelerated growth and market size have prompted companies to invest in applied research and development of new products (Schmookler, 1966). There is the idea that knowledge and technological capability of a given epoch are applicable in diverse industrial areas. Industrial sectors that use these skills and invest in the means to apply them to improve their production processes and products are those that have large and growing markets.

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These markets assume that there is greater profitability in companies that invest in research and development (R & D). The R & D resources are all assets, capabilities, organizational processes, attributes, information, knowledge, etc. controlled by a firm that used to conceive and implement strategies to increase their efficiency and effectiveness (Barney, 1991). The resources include the static aspect which in turn includes the stock of productive factors that the company owns and controls. Capabilities are considered a flow, i.e. represent the dynamic aspect, and are those that define the way companies use their resources to R & D (Grant, 1991). In this context, the majority of companies in Mexico have the resources to develop strategies that enable them to have a differentiated value through the implementation of R & D, so they can have growth and stay in the market.

According to Peng (2006), strategies that a company must propose must be based essentially on the combination of actions deliberately planned and emergent activities in those who are not. However, the basic premise for the design of strategies is that companies must know themselves before that can meet their competition. This knowledge of the firm is obtained through an assessment of their strengths (F) and opportunities (O) and weaknesses (D) and threats (A) present in their environment. Therefore, the capabilities are fundamental for the implementation of strategies. These are based on organizational knowledge frequently not coded, which is stored in the memory of the organization, in such a way that they automatically respond to certain stimuli.

Thus, the ability has to be understood as a routine or set of routines. Organizational routines are a number of policy measures that indicate regular and predictable tasks to be performed and how to carry them out. Understand complex patterns of interaction between people and between these and other resources, which have formed slowly as a result of collective learning of the organization and at all times define what the organization can do and what is impossible. This implies that only resources can be used in a limited scope of possibilities (Amid, and Schoemaker, 1993).

According to the Frascati Manual (OECD, 1994), scientific and technological innovation can be considered as the transformation of an idea into a new or improved product as it is introduced in the market, in an new industrial and commercial process, new or improved commerce or a new service model that provides to society. The word innovation has different meanings in different contexts, and the right choice in each case will depend on the particular objectives of the measure and analysis. Innovation also involves a series of scientific, technological, organizational, and financial and trade activities.

The R & D is only one of these activities and can be part of different phases of the innovation process. It is not entirely of the original source of ideas and inventive but also one way of solving problems (OECD, 1991)

III. Definition of the Problem

Competitive intensity has resulted in economic globalization has resulted in volatility also companies as a result of competitive fragility at the progress of R & D. This has enabled more efficient production processes and distribution of products. The volatility of the companies not only affects newly created but many that have been considered immovable leaders have been affected by resisting the "creative destruction" that represents business innovation. In contrast, many other organizations have responded with new strategies.

According to De la Cerda (2007), there are four strategies that have the greatest impact on business. These strategies can achieve the durability and superior performance: Securitization and other financial strategies, internationalization, diversification of business lines and the constitution or business group affiliation. In addition, two other strategies that do not yet have significant value are vertical integration and technological modernization.

On the other hand, in contrast, there are two strategies that are negative, as they have weakened the durability and performance: Mergers with other companies and commercial and technological alliances, joint ventures or outsourcings. These strategies are not available to all companies, and face the problem that it is no longer enough to have access to raw materials and have cheap labor, should also have the knowledge to enable them to produce more competitive. But this is not so easy. There is a need to develop skills that enable them to transform their information into useful knowledge applicable and that its use gives them a sustainable advantage.

This leads us to formulate the following research question: How Mexican companies have achieved strategic fit, as a result, has allowed the survival and development within a competitive market?

Mexican companies have had to diversify their sources of knowledge, ranging from the generated and managed within the company until that occurring in universities and technological research centers. This allows them to adapt and survive.

IV. Justification

Most Mexican companies innovate by acquiring or adapting technology. To do this, companies establish various means of collaboration with other companies, without necessarily being R & D, and thus integrate into

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complex production chains taking advantage of market incentives (De Gortari and Santos, 2007).

In short, innovation processes of Mexican companies are ranging from the ability to acquire relevant technologies and their subsequent assimilation into their own conditions and according to the local environment to the development of new processes and products. While such processes are often not located in the advanced knowledge, they allow the company to solve problems and help them to compete in local and global markets.

Innovation processes in Mexican companies are more related to assimilation, application and use of technological knowledge in project development. As already mentioned, their innovation processes are ranging from the ability to acquire relevant technologies and their assimilation. Some companies develop their own technology, which gain advantages over those that decide to acquire outside. Perhaps most important of the first is that with their own innovation, firms maintain their competitive advantage, which is based on internal developments (Nonaka, 1991, Winter, 1987).

V. Theoretical Assumption

The intangible nature of knowledge makes it can be copied to a relatively low cost, with the consequent problem of the appropriation of results of the effort and innovation that a company develops. In this situation, it is unclear the final effects on property rights in R & D. While dissemination of information innovation performance of the company may discourage innovative efforts to your competitors, it has the opposite effect, i.e., so spread the benefits of technological advances, which can be exploited by other companies.

To mimic or copy the innovation performance of another company, the imitating firm must have technical knowledge and, on the other hand, the dissemination of results encourages investment in R & D by companies that might be interested to imitate or copy the leader. Furthermore, there is not a clear relationship between the intensity of R & D and the use of patents in business. Therefore it is difficult to know whether the competing companies are interested in imitating or copying technologies.

VI. Background

Why do some firms outperform others? It is a question that continues in the air. It is known that companies change their business strategies to increase their performance, sell more and better, produce and operate more efficiently, increase brand value or gain prestige in the market. But not all can have the expected success. In the long term, to differentiate their paths, some fail to improve, and only a few manage to survive adversity and improve their participation in their industries for a long time. On the other hand, large firms should implement different strategies if they want to stay in the market, as not only small and medium are subject to change.

There are two main perspectives or paradigms of strategic management:

Perspective A. The performance of the companies is based on the competitive structure of an industry in the market. Companies with greater market power have the ability to raise prices above the level of competence, because they operate in industries or economic sectors where the entry of new competitors is constrained by impassable barriers for most of them. Performance differences persist until such entry barriers are overcome by other companies or are smoothed by government regulations (Porter, 1980, 1985).

Perspective B. The performance of the companies is based on the capacity created by organizations; they can develop superior capabilities that make them more efficient or productive than others. The most unique, inimitable, value creating differentiated are those skills, the more costly for other firms to obtain these skills and, therefore, differences in performance and yields can be sustained over time (Rumelt, Shandel and Teece, 1991 ; Wernerfelt 1984; Barney, 1991; Barney and Clark, 2007).

Companies operate to adapt to the changing environment and competition within their industries and the situation by passing in a given time, especially economic or technological conditions.

What does business survival mean? According to Senge (1990), few large corporations that manage at least half the time that lives a person. The author examines the difficulty of organizations to survive many years in turbulent environments. La average duration of an industrial company in the second half of the twentieth century was less than forty years (De Geus, 1997). The same Senge (1990) argues that the fact that companies are born and disappear continuously can be good for society as a whole, because there is always the doubt that the economy distributes resources so efficient, however, always be the doubt whether the continuing mortality of companies at the bottom is not due to that organizations are a poor learners immersed in a terrible mediocrity, of which only a few are able to develop their potential for adaptation and transformation.

According to De la Cerda (2007), there are missing data and business retention for the Mexican case and some other interesting Latin America as a whole. In Mexico, in a sample of 3,604 large and medium enterprises, where 75% are of Mexican or Latin American and 25% are foreign non-Latin American, 58% (2,091) disappeared or ended his original life cycle. Thus, wounded and beaten, many companies have succumbed to instability and disorder, and the survivors have acquired the instinct of rapid adaptation to unstable contexts. In this, it may be the competitive advantage of firms (Schneider, 2007).

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According to the strategic theory of the firm, organizations not only have the ability to adapt to competitive environments, but they can also reconfigure their sectors through most significant actions (Barney and Hesterly, 1996, Porter, 1980). Companies who want to increase their chances of survival can make adaptive changes within and outside their domains.

Table 1 : Organizational Survival in Mexico: leading destinations during the years from 1976 to 2006)

Reasons volatility	Frequency	Percentage
Organizations disappeared by asset liquidation or closing of business.	1,091	40.2
Organizations that were acquired by foreign multinational groups and became their affiliates.	101	3.7
Organizations that were acquired or merged by other national groups, and although their operations remain; now they are part of another company.	488	18
Organizations whose original property was the federal government, but were privatized, either by domestic or foreign investors.	29	1.1
Organizations divested, reduced their size and sales fell, but survive as businesses.	181	6.7
Organizations that have remained as national investors, but their business migrated to the maquila, franchises, distributors or licensees of foreign companies.	109	4
Organizations that became or were formed as heads of holding companies, whose operations are primarily corporate.	173	6.4
Organizations that have remained the property of the federal government and never have been privatized.	33	1.2
Organizations that have maintained their original version as independent national companies, producing and expand their own operations and product portfolio since its founding.	331	12.2
Organizations that did not offer sufficient information to recognize your path and determine their current status.	176	6.5
Total	2,712	100

Source: De la Cerda (2007: P. 49)

The data show that over 40% of the leading organizations disappeared by asset liquidation, bankruptcy or closure. The missing or terminated organizations for reasons of privatization, acquisition or merger represent 23%. Other 181 have survived, although they have weakened or over the years, so have been losing market share and, therefore, left the list of the most competitive in Mexico.

VII. Key success Factors of R & D

Brown and Svenson (1998) studied the success of the R & D from the perspective of systems theory. They consider the production system in these departments is characterized by resource consumption subject to a process that leads to the outputs in the R & D that are considered intermediate for the organization, which helps achieve the overall objectives of the corporation.

In particular, the dimensions of the system are:

1. The inputs, which are system resources that generate a cognitive process. Include human factors, information, ideas, equipment, organization and funding sources. Following Autio and Laamanen (1995), the indicators used to measure the inputs are of three types: monetary and physical resources, capacity, and technological inputs.
2. The production process of an R & D Department transforms inputs into outputs through conducting research projects, proper planning of activities, human resource training and technology services, among others.

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3. The output of these departments include, among others, the publication of books, software development, product and process innovation, technology transfer, both internally and externally, patents and utility models. Indicators of outputs used, following Autio and Laamanen (1995), are of three types: research and technological outputs, commercial outputs and monetary outputs. Geisler and Rubenstein (1987) outputs added as change indicators in production rate, productivity and profit.
4. The final consumer of the output of R & D would be different, depending on the type of company, public or private, divisional or not. Also, it is important to highlight the fact if the transfer occurs to production departments or to the marketing, or outside the company.
5. The results of R & D outputs also depend on the final consumers of the outputs of R & D. Shareholders seek to maximize profits and managers the minimization of costs, increased sales and market share, or the development of new products.

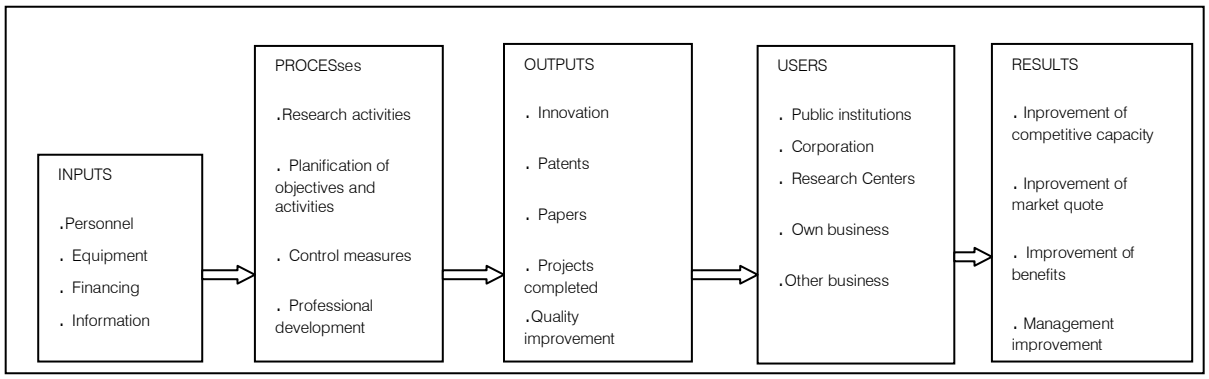

Figure 1 : Production system of Research and Development Department.

Source: Taken from Garcia and Mendigorri (1998: P. 19)

VIII. Strategic Change

Strategic change is an uncertain process, which often tends to be redundant and repetitive, sometimes reactive. It builds through a sequential logic and is often interrupted by the decisions of management or external factors. Senior managers of a company are the initiators of strategic change. They design strategies for the transformation, which can vary according to their training, allowing you to adopt the best strategy. Table 2 shows how to make strategies based on decision theory, which is usually safer methodical difference and in behavior, according to which strategies are adopted from existing resources without analyzing decisions.

Table 2 : Choice of strategies according to the theory of decisions versus organizational behavior

According todecision theory	According tobehavioral theory
Strategyis chosenaccording toobjective goals, clearandgeneral consensusabout the future.	It is chosena strategy withouthaving goalscomplete, clearanddefinedaslong-termgoalsoften lackabsoluteconsensusabout the future.
Itchoosesthe best strategy fora range of alternativesanalyzedobjectively.	Itchoosesthe best strategyknownbythe group whodecides onlesser-knownalternatives.
Strategyis chosentaking intoaccount all the variablesthat may be involvedin its implementation.	Strategyis chosenbased onthe known variables,leaving outmany factors.
Ideal strategyis chosenindependentlyofthe resources needed toimplement it.	Strategyis chosenfrom apragmaticapproachaccording tothe available resources.
It choosesthe optimal strategy.	Successful strategyis chosen.

Source: De la Cerda (2007: P.70)

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IX. Results

Companies are highly vulnerable to changes in the business environment and market. Only a few manage to adapt and survive because their life cycle is getting shorter. Also depend on the strategies implemented by their managers, links, resources and location.

According to the data presented above, in the second half of the last century more than 40% of organizations disappeared by asset liquidation, bankruptcy or closure. The 23% longer exist because of privatization, acquisition or merger. Another 6.7% (181 companies), but survived, weakened or with over the years have been losing market share.

Important indicators of R & D are patents and process improvement models. Most companies that decide to patent their products see a clear benefit and prefer to develop and improve their own against those of their competitors and win a greater market share.

X. Conclusions

Companies are vulnerable to changes in their environment, especially to economic cycles. Current firms have had to diversify their sources of knowledge, ranging from those that are created and managed within the company to those carried out in universities and technological research centers in order to adapt and survive.

Companies with a high level of failure are those with disadvantages in size, lack of experience, lack of knowledge of the industry and the market, as well as insufficient resources to compete with larger companies. Currently it cannot be known exactly how many companies have disappeared from the market. There are no records of these disappearances, and if there are scattered. The little information that is available includes certain periods of time and is prepared by magazines, newspaper, internet or news. Most of the time there are just about alarming notes, and few research papers that fully address the issue of mortality and survival of firms.

Among the results of R & D in Mexican companies, in some cases include patentable products. But in the business sector, and even academics, it is not yet clear the benefits of the processes. Furthermore, according to the characteristics of Mexican businessmen, they tend to be reluctant to cooperate, are distrustful and prefer to work in isolation in their company. This behavior can influence positive or negative, as it depends largely on the experience and knowledge that has to uncover opportunity areas that may benefit or impact business.

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"Economic Multipliers for Jordanian Economy: (Input-Output Analysis)"

By Osama Mahmoud Al Zoubi
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Abstract- This study aims to assess the impact of different sectors in the Jordanian economy by using Input-Output Multipliers Analysis and how they developed. The paper attempts to prove it by using Input-Output tables of Jordan economy to the years: 1987, 2000, and 2009. To facilitate the comparison process between activities the researcher assembled and aggregated them to 15 sectors. This study applied input-output technique to determine economic effects to gauge the significance of these industries in generating Output, Income, and Employment.

Keywords: input-output model (iom), jordanian input-output tables (jiot), output multipliers (om), income multipliers (im), employment multipliers (em).

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The Multipliers have been obtained in 2009 showed among the sectors; The Manufacture sector showed the highest output multiplier, The Services (especially finance) gained the highest income multiplier; Finally, The Construction sector has the highest Employment Multipliers.

Keywords: input-output model (iom), jordanian input-output tables (jiot), output multipliers (om), income multipliers (im), employment multipliers (em).

I. Introduction

Economists have long been interested in measuring the total impact upon output, income and employment resulting from a given change in demand or investment. To this end, the multiplier as developed by Keynes is one of the most useful analytical techniques (Mieryk, 1967).

One of the most important uses of Input-Output Tables in the analytical models is to assess the effects on the economy due to change in one of the elements of exogenous variables of the economy by using multipliers analysis. In this study we will use the table built by the researcher for 2000 using the actual data and the updating table for 2009 which built by the researcher using RAS method, in addition to 1987 table which built by government of Jordan.

II. Research Problem and Objectives

There are no such studies analyzing different multipliers by using IOT, which debilitating decision-making process to motivate final demand on economic sectors products.

The aim of this study to analyze the multipliers in Jordanian Economy to determine the most influential economic sectors in production, income and employment, which thru the polices toward true decision making to direct final demand on sectors products that most affected according to the economic priorities in Jordan if decreasing the unemployment through motivation the demand on products of sectors which have the highest using of multipliers, or increasing the income through affected the demand on products which have the highest income multipliers, and so on.

III. The Importance of Research

Jordanian economic is suffering since the end of eighties in last century from several economic problems which obstruct its growth and progress; from weakness of output and inability to meet local needs in various forms, to shrinking the level of income and rising unemployment.

To mitigate the severity of these problems through formulate plans, the planners and decision makers should depend on scientific studies in specify the economic sectors which have the greater impact on incentive the yield, growing up the income, and rising the employment.

IV. Methodology

To achieve objectives of this paper, we will employ method based on Leontief's input-output framework (e.g. Leontief, 1966; Miller & Blair, 1985) where the structure of an economy is analyzed in terms of interconnection between production sectors.

V. Theoretical Framework

Input-Output tables are part of the Jordanian national accounts, complementing the quarterly and annual series of national income, expenditure and product aggregates. They provide detailed information about the supply and nature of commodities in the Jordanian economy and about the structure of, and inter-relationships between, Jordanian industries.

Detailed data on supply and use of commodities, inter-industry flows and a assortment of derived data, such as input-output multipliers, are provided for economic planning and analysis, and construction of models for forecasting purposes. The data can also be useful for non-economists seeking a thorough knowledge of relationships in the Jordanian economy.

This study is intended to serve three main purposes. First, it provides a guide to the construction and interpretation of input-output multipliers. Second, it provides details of the way in which the input-output

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multiplier tables can be used. Third, it provides a means of answering some of the questions often requested by input-output practitioners.

These queries tend to arise because of the types of "what if?" analysis for which input-output tables can be used (for example, what would be the impact on employment of an x% change in output by the x industry). This type of analysis is really dependent on acknowledge of input-output multipliers and their weaknesses. Using input-output tables, multipliers can be calculated to provide a simple means of working out the flow on effects of a change in output in an industry on one or more of imports, income, employment or output in individual industries or in total.

VI. Literature Review

Literature on the calculation of Keynesian multipliers traces back to Richard Kahn's (1931) description of an employment multiplier for government expenditure during a period of high unemployment. According to Leontief (1941), who developed a set of national-level multipliers that could be used to estimate the economy-wide effect that an initial change in final demand has on an economy, all the calculation of I-O multipliers traces back to him. And Isard (1953) applied input-output analysis to a regional economy.

According to Richardson (1985), the first attempt to create regional multipliers by adjusting national data with regional data was Moore and Peterson (1955) for the state of Utah.

In a parallel development, Tiebout (1956) specified a model of regional economic growth that focuses on regional exports. His economic base multipliers are based on a model that separates production sold to consumers from outside the region to production sold to consumers in the region. The magnitude of his multiplier is based on the regional supply chain and local consumer spending.

Hughes (2003) discusses the limitations of the application of multipliers and provides a checklist to consider when conducting regional impact studies. Siegfried, Sanderson, and McHenry (2006) discuss the application of regional multipliers in the context of college and university impact studies, another area where the multipliers are commonly misused

Paper by Bess &Ambargis (2011), they said: "Input-output models, when applied correctly, can be powerful tools for estimating the economy-wide effects of an initial change in economic activity. To effectively use these models, analysts must collect detailed information about the project or program under study. Analysts also need to be aware of the assumptions and limitations of these models. In this paper, we will focus on these assumptions and on the information that is required to use regional input-output multipliers correctly. We focus specifically on multipliers generated by the Regional Input-Output Modeling System (RIMS II) developed by the Bureau of Economic Analysis".

A study by (Bekhet, 2011) attempts to investigate the success or failure development policies for Malaysia economy through the multipliers indices over the period 1983-2000. The study used four input-output tables had published so far by Department Statistics of Malaysia (DSOM) for the period under study.

The study employed the Leontief inverse model that is open with respect to household for simple multipliers of the output, income and employment. New evidence is found in this study: first, there is still a high dependency on the primary sectors, such us Oil palm, Rubber primary products and Wood sectors. Second, output and income multipliers for Agriculture sector are still very weak even where some success has resulted from planning policies. Third, the main result of the investment policy was to transform Malaysia from a country of surplus labor to one with a shortage. Fourth, there is no consideration of efficiency or comparative cost in the selection of 'key' sectors by reference to multiplier indices.

VII. Data and Mathematical Techniques

a) *Output Multipliers*

An output multiplier is defined as the change in gross output resulting from a unit change in final demand in a given sector (Miller, & Blair, 1985).

b) *Simple Output Multipliers*

For the simple output multiplier, the total production is the direct and indirect output effect obtained from a model in which households are exogenous. The initial output effect on the economy is defined to be simply the initial JD's (Jordan Currency, Dinar) worth of sector j output needed to satisfy the additional final demand (Bekhet, H. A., 1990).

Simple output multipliers for each sector defined as the sum of the column, refer to the specific sector, in Leontief invers matrix divided by JD, this JD is an initial impact on the production of specific sector resulting from the initial increasing in the final demand by one JD for products of that sector, then we can formulated simple output multipliers as follows (Bulmer, 1982):

$$OM_j = \sum_{i=1}^{n} r_{ij} \qquad (1)$$

Where:

OM_j: value of simple output multiplier for sector j (j=1,2,3……).

$\sum r_{ij}$: total for each columns in Leontief matrix invers.

By applying this equation on Jordanian Input-Output Tables upon the intended years .Through table (1) we can see the result of simple output multipliers

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which orders the sectors; In 2009 manufacturing sector ranked as the first grade, while in 2000 it ranked as the second grade, finally in 1987 it ranked as the fourth grade. It's important to note that the value of multipliers change significantly for some sectors during the period 1987-2009.

c) Total Output Multipliers

To estimate the value of these multipliers will be considered the matrix of technical coefficients as closed form (closed model), which means that the household sector is part of this matrix and not part of the final demand, this means that the household sector has become an endogenous variable, in which case the output multipliers will include additional effect (Induced Effect) for household income as a supplier of labor services (Miller and Blair, 1985).

By using($\bar{A}$) instead of (A), we can write the general wording of the equation as (Bulmer, 1982):

$$\bar{O}M_j = \sum_{i=1}^{n+1} \bar{r}_{ij} \qquad (2)$$

$\bar{O}M_j$: Value of total output multiplier for sector j (j=1, 2, 3……).

$\sum \bar{r}_{ij}$:Total for each column in Leontief matrix invers.

The results of applying thisequation to the Jordanian input-output tables between 1987 and 2009 are shown in table (1).

Manufacturing sector ranked as the top one in 2009, the value of this multiplier means that if the final demand on the products of this sector increased by One JD, it will be generate an increase in the total production -including labor services produced by household sector- for all sectors which is 5.23 JDs in 2009, compared with 4.04 JDs in 2000, and 1.82 JDs in 1987, it indicates as the total output multipliers. In the other side the real estate ranked in the last place of terms value of the multipliers over the three years. The important observation that the manufacturing sector moved from 12th rank in 1987 to 4th place in 2000 , and the 1st in 2009 , the growth in Manufacturing sector as a result of establishing several industrial zones stretched in all Provinces in Jordan due to "Jordan Free Trade Agreement with US (FTA), 2009"(www.ustr.gov).

d) Income Multipliers

Income multipliers attempt to translate the impacts of final demand spending changes into changes in income received by household sector as a labor supplier (Miller and Blair, 1985), this will cause many changes in production of other sectors and in income of labor in the same sectors, so we can distinguish between four kinds of multipliers as follow:

i. *Simple Income Multipliers*

This multiplier can be found by using elements of Leontief invers matrix$(I-A)^{-1}$with household exogenous, mathematically we can represent this as:

$$H_j = h' (I-A)^{-1} \qquad (3)$$

Where: H_j: simple income multipliers

h':row vector of technical coefficients of labor income.

Applying equation (3)onThe Jordanian Input-Output Tables to the same era (1987, 2000, and 2009), we have the results are shown in Table (2).

These figures illustrate the changes in household income in other words "when the final demand changed by One JD through the impact on production of the sector concerned and other related sectors", which will create an impact on the workers' income in that sector.

ii. *Total Income Multipliers*

In this multiplier Leontief inverse matrix is used, in the closed model considering the household sector as an endogenous variable, the results show the total income effect (direct and indirect and induced), which is called the total household income multiplier, as shown by the following equation:

$$\bar{H} = h (I-\bar{A})^{-1} \qquad (4)$$

Table (2) illustrates the result of this equation when Appling it on the Jordanian input output tables for the same period. The value of this multiplier reflects the direct and indirect effects on household income due to the increase of final demand by One JD; for example, if final demand on products of the first sector (agriculture) by One JD, the income of workers in the same sector will grow by 0.440 JDs in the year 2009 as a result of direct and indirect effects on this increase.

iii. *Type I Income Multipliers*

Another kind of multipliers which is simple income multiplier, through this type we can express the direct and indirect effects on income resulting from One JD increase in final demand for sector j. The primary increase in production of sector j will generate successive increases in the production of other sectors and that will affect the production to the same sector as well, as it increases the income of workers in the sector j it will also generate effects on the production of the same and other sectors, more over that will affect again the workers' income in this sector, the value of this factor equals the sum of all these effects. We can find the value of this multiplier by using the formula of simple income multiplier given in equation (3) as a numerator, and uses as a denominator not the initial JD worth of output, but rather its initial labor income effect, h (Bradley & James, 1969).

$$Y_j = h' (I-A)^{-1} h^{-1} \qquad (5)$$

Y_j: Type I income multipliers

$h' (I-A)^{-1}$: Simple income multipliers

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h^{-1}: Technical coefficient of household income (Value of Labor Income Divided by Total Production).

The result of applying this formula to Jordanian Input-output tables shown in table (3). We can see in Table (3) sharp rise in the value of this multiplier for Agriculture, Manufacturing, Electricity and Construction in the years 2000 and 2009 compared with the year 1987.

iv. *Type II Income Multipliers*

This kind represents the ratio of the direct, indirect and induced income change to the direct income change due to a unit increase in final demand. It takes into account the effects of secondary rounds of consumer spending in addition to the direct and indirect inter industry effects, also it has the total income multiplier (numerator) as in equation (4), and it used as a denominator the initial labor income effect, h (Miller and Blair 1985).

$$\bar{Y}_j = h' (I - \bar{A})^{-1} h^{-1} \quad (6)$$

$\bar{Y}$ j: Type II Income Multiplier, $h' (I - A)^{-1}$: total income multiplier

h^{-1}: Technical Coefficient of Household Income

We can see the results after applying formula (6) on JIOT in table (3). These multipliers show how much the initial income effects (household input coefficients) are blown up, or multiplied. This occurs when direct, indirect and induced effects (due to household spending because of increased household income) are taken into account, in which household are an endogenous sector.

e) Employment Multipliers

If we assume there is a very close relationship between the levels of employment and output industry j, then the employment/output ratio can be defined for all levels of output, so the entries in the input-output system can be converted to employment terms to yield employment multipliers (Ghosh, 1970).

When we calculate the employment multipliers we will see the major difference in calculations of wages content of products so the physical labor input coefficients will be used instead of monetary labor input coefficients (European Commission, 2008), then we can calculate employment multipliers, rather than income multipliers for each sector, because of that we used here the employment output ratio (numbers of jobs per thousand JD of output).

i. *Simple and Total Employment Multipliers*

As I mentioned in income multipliers about the measures that affect the income multipliers, there is a difference between employment and income multipliers which is using number of employees (as material units) rather than the monetary value of labor inputs in the production process (Miller and Blair, 1985), thus we can formulate simple multiplier as follows:

$$L = w' (I - A)^{-1}$$

Where:L: employment multiplier.

w′: row vector represent number of employees.

Table (4) shows us the results after we applied quotation (7) on JIOT. For each sector the employment multipliers represent jobs created per One JD of additional final demand, construction sector has the highest multiplier in 2009, which means it has been use labor intensely. If the final demand for construction products were increased by one thousand JD, 0.735 positions for employees would be created in this sector.

By using the closed input-output tables, we're going to get what is known the total employment effect or total employment multiplier which given in the following formula (Bekhet, H.A., 1990):

$$\bar{L} = w' (I - \bar{A})^{-1} \quad (8)$$

The total employment multipliers for the Jordan economy are shown in table (4).

ii. *Type I and Type II Employment Multipliers*

Type I and type II employment multipliers follow from the same argument as was presented for type I and type II income multipliers, (Richardson, 1972). One may wish to relate the simple or total employment effect to an initial change in employment, not final demand (and output) in monetary terms. The type I employment multiplier uses simple employment multiplier as a numerator and (w) which equal the percentage of number of employees to production as the denomination. Mathematically, the vector of the employment multiplier (t) is given by:

$$T = w' (I-A)^{-1} w^{-1} \quad (9)$$

The results for the Jordan economy are shown in table (5). It means for each new job created in any sector, for example electricity product, there is a total of1.185 , 4.643, and 5.009 jobs created in all sectors throughout the economy in the years 1991, 2000, and 2009 respectively.

When using closed input-output model by $(I-)^{-1}$ rather than $(I-A)^{-1}$ it allows us to measure the type II employment multiplier. Using (t) for the vector of this multiplier which is parallel to the type II income multipliers, the following equation show represent this multiplier (Katz, J.L. 1980):

$$\bar{L} = w' (I - \bar{A})\text{-}1w\text{-}1 \quad (10)$$

The results obtained by this equation for the Jordan Economy are shown in Table (5). The high values of sectors Electricity, Mining & Querying, and Manufacturing in 2009 demonstrate that the real area growth of employment opportunity just in these sectors.

VIII. Recommendation

Jordan's economy suffering high poverty and unemployment problems, this result demonstrated through multipliers values. To lessen the unemployment

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problems, the decision makers should focus on the sectors which have higher employment multipliers like construction and other services sectors which often consist of small and medium enterprises.

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Table (1) : Simple and Total Output Multipliers

Table (1): Simple and Total Output Multipliers

No.	Sector Name	Simple Output Multipliers						Total Output Multipliers					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, forestry and fishing	1.467	8	2.042	4	1.890	7	1.82	12	4.48	2	3.56	9
2	Mining and Querying	1.475	6	2.022	8	1.944	6	1.92	9	3.17	11	3.67	8
3	Manufacturing	1.525	4	2.854	2	4.324	1	1.82	12	4.04	4	5.231	1
4	Electricity	1.671	1	2.627	3	2.732	3	2.02	6	3.76	5	4.64	2
5	Water	1.474	7	2.135	7	1.842	8	1.91	10	3.4	9	3.04	12
6	Construction	1.584	2	3.023	1	3.631	2	2.63	1	4.66	1	4.36	3
7	Retail & wholesale Trade, and repair maintenance	1.493	5	1.456	13	1.600	11	2	7	2.39	13	2.61	13
8	Restaurants&Hotels	1.561	3	2.196	5	2.301	4	2.15	4	3.33	10	3.9	6
9	Transport	1.426	10	1.921	9	1.829	10	1.83	11	2.87	12	3.14	11
10	Communication	1.106	15	1.299	14	1.304	14	1.65	14	1.83	14	1.94	14
11	Financial & insurance	1.273	13	1.493	11	1.246	15	2.25	3	3.52	7	3.71	7
12	Real estate and Business services	1.243	14	1.223	15	1.349	13	1.36	15	1.49	15	1.67	15
13	Education	1.343	11	1.477	12	1.476	12	1.94	8	3.41	8	3.52	10
14	Health and social work	1.276	12	2.149	6	1.992	5	2.57	2	3.76	5	4.02	5
15	Other services	1.443	9	1.809	10	1.841	9	2.08	5	4.22	3	4.34	4

Sources : 1. Al Zoubi, Osama, Construction and Analysis Input–Output Tables for Jordan Economy in 2000, 2009, Baghdad university, PHD thesis, not published, 2013.

2. Department of Statistics, Input-output tables 1987, not published, 2010.

Table (2): Simple and Total Income Multipliers

No.		Simple Income Multipliers						Total Income Multipliers					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, Sector Name forestry and fishing	0.126	12	0.365	7	0.380	8	0.144	12	0.535	7	0.440	10
2	Mining and Querying	0.158	9	0.339	9	0.370	10	0.180	9	0.497	9	0.464	8
3	Manufacturing	0.104	14	0.350	8	0.420	6	0.119	14	0.512	8	0.399	13
4	Electricity	0.124	13	0.334	11	0.370	9	0.141	13	0.489	11	0.413	11
5	Water	0.154	10	0.374	6	0.400	7	0.176	10	0.548	6	0.485	7
6	Construction	0.373	2	0.484	4	0.490	4	0.427	2	0.708	4	0.866	3
7	Retail & wholesaleTrade, and repair maintenance	0.179	8	0.276	13	0.270	13	0.205	8	0.405	13	0.448	9
8	Restaurants&Hotels	0.210	6	0.335	10	0.350	11	0.241	6	0.491	10	0.534	6
9	Transport	0.145	11	0.279	12	0.310	12	0.166	11	0.409	12	0.403	12
10	Communications	0.194	7	0.156	14	0.200	14	0.222	7	0.229	14	0.380	14
11	Financial & insurance	0.348	3	0.599	2	0.700	1	0.398	3	0.877	2	0.915	2
12	Real estate and Business services	0.043	15	0.080	15	0.100	15	0.050	15	0.117	15	0.118	15
13	Education	0.214	5	0.571	3	0.560	3	0.244	5	0.836	3	0.710	5
14	Health and social work	0.463	1	0.476	5	0.450	5	0.529	1	0.697	5	0.982	1
15	Other services	0.227	4	0.712	1	0.690	2	0.260	4	1.042	1	0.833	4

Sources : 1. Al Zoubi, Osama, Construction and Analysis Input–Output Tables for Jordan Economy in 2000, 2009, Baghdad university, PHD thesis, not published, 2013.

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Table (3) : Type I and II Income Multipliers

Table (3):Type I and II Income Multipliers													
No.	Sector Name	Type I Income Multipliers						Type II Income Multipliers					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, forestry and fishing	1.471	4	3.972	1	3.182	2	1.680	4	5.820	1	1.957	8
2	Mining and Querying	1.385	7	1.739	8	1.772	8	1.580	7	2.550	8	1.964	7
3	Manufacturing	1.741	3	3.418	2	3.213	1	1.990	3	5.000	2	3.555	1
4	Electricity	1.752	2	2.529	3	2.505	4	2.000	2	3.700	3	2.771	2
5	Water	1.284	9	1.741	7	1.746	9	1.470	9	2.550	7	1.934	9
6	Construction	1.146	12	2.292	4	2.649	3	1.310	12	3.360	4	2.382	3
7	Retail & wholesaleTrade, and repair maintenance	1.402	5	1.249	12	1.385	11	1.600	5	1.830	12	1.533	11
8	Restaurants&Hotels	1.332	8	1.790	5	1.798	6	1.520	8	2.620	5	1.990	5
9	Transport	1.385	6	1.754	6	1.784	7	1.580	6	2.570	6	1.976	6
10	Communications	1.056	15	1.284	11	1.318	12	1.210	15	1.880	11	1.460	12
11	Financial & insurance	1.096	13	1.174	14	1.241	14	1.250	13	1.720	14	1.374	14
12	Real estate and Business services	64.012	1	1.678	9	1.944	5	73.180	1	2.460	9	2.099	4
13	Education	1.149	11	1.132	15	1.222	15	1.310	11	1.660	15	1.353	15
14	Health and social work	1.091	14	1.412	10	1.430	10	1.250	14	2.070	10	1.585	10
15	Other services	1.255	10	1.212	13	1.315	13	1.430	10	1.770	13	1.452	13

Sources : 1. Al Zoubi, Osama, Construction and Analysis Input–Output Tables for Jordan Economy in 2000, 2009, Baghdad university, PHD thesis, not published, 2013.

2. Department of Statistics, Input-output tables 1987, not published, 2010.

Table (4) : Simple and Total Employment Multipliers

Table (4): Simple and Total Employment Multipliers

No.	Sector Name	Simple Employment Multipliers						Total Employment Multipliers					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, forestry and fishing	0.299	5	0.397	1	0.351	4	0.319	5	0.487	1	0.374	5
2	Mining and Querying	0.060	15	0.097	12	0.051	13	0.084	15	0.180	13	0.072	13
3	Manufacturing	0.079	10	0.163	8	0.067	11	0.095	13	0.248	8	0.081	11
4	Electricity	0.269	6	0.118	11	0.290	7	0.288	6	0.199	12	0.311	7
5	Water	0.069	14	0.135	9	0.092	10	0.093	14	0.227	10	0.125	10
6	Construction	1.748	1	0.198	6	0.735	1	1.806	1	0.316	5	0.759	1
7	Retail & wholesaleTrade, and repair maintenance	0.129	9	0.226	4	0.128	9	0.157	9	0.293	6	0.155	9
8	Restaurants&Hotels	0.150	8	0.179	7	0.208	8	0.183	7	0.261	7	0.254	8
9	Transport	0.074	12	0.135	9	0.050	14	0.097	12	0.203	11	0.065	15
10	Communications	0.075	11	0.04	14	0.052	12	0.105	11	0.078	14	0.073	12
11	Financial & insurance	0.072	13	0.09	13	0.039	15	0.126	10	0.236	9	0.069	14
12	Real estate and Business services	0.170	7	0.04	14	0.336	5	0.177	8	0.059	15	0.350	6
13	Education	0.384	3	0.227	3	0.386	2	0.417	3	0.366	3	0.419	3
14	Health and social work	0.316	4	0.221	5	0.334	6	0.387	4	0.337	4	0.409	4
15	Other services	0.394	2	0.235	2	0.357	3	0.499	2	0.409	2	0.452	2

Sources: 1. Al Zoubi, Osama, Construction and Analysis Input–Output Tables for Jordan Economy in 2000, 2009, Baghdad university, PHD thesis, not published, 2013.

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Table (5) : Type I and II Employment Multipliers

(5)Type I and II Employment Multipliers

No **Table.**	Sector Name	Type I Employment Multipliers						Type II Employment Multipliers					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, forestry and fishing	1.148	12	1.866	5	2.189	7	1.222	13	2.286	11	2.681	7
2	Mining and Querying	1.935	4	3.820	2	3.276	2	2.716	3	7.099	2	6.088	2
3	Manufacturing	2.109	3	3.606	3	3.067	3	2.537	5	5.502	3	4.679	3
4	Electricity	1.185	10	4.643	1	5.009	1	1.269	12	7.864	1	8.484	1
5	Water	1.599	7	1.843	6	2.467	5	2.149	6	3.090	6	4.137	5
6	Construction	1.052	14	2.477	4	1.041	14	1.086	15	3.954	4	1.662	14
7	Retail & wholesaleTrade, and repair maintenance	2.878	2	1.118	15	1.106	12	3.497	2	1.453	15	1.438	15
8	Restaurants&Hotels	1.757	5	1.752	7	2.434	6	2.136	7	2.553	9	3.547	6
9	Transport	1.640	6	1.738	8	1.170	10	2.133	8	2.618	8	1.763	13
10	Communications	1.157	11	1.568	9	1.084	13	1.618	9	3.075	7	2.126	9
11	Financial & insurance	1.466	8	1.412	12	0.773	15	2.548	4	3.705	5	2.029	11
12	Real estate and Business services	7.232	1	1.508	11	2.984	4	7.515	1	2.254	13	4.461	4
13	Education	1.102	13	1.158	14	1.164	11	1.197	14	1.871	14	1.881	12
14	Health and social work	1.208	9	1.520	10	1.605	8	1.480	10	2.321	10	2.451	8
15	Other services	1.010	15	1.304	13	1.181	9	1.278	11	2.270	12	2.056	10

Sources: 1. Al Zoubi, Osama, Construction and Analysis Input–Output Tables for Jordan Economy in 2000, 2009, Baghdad university, PHD thesis, not published, 2013.

2. Department of Statistics, Input-output tables 1987, not published, 2010.

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Situation of Child Domestic Workers in Bangladesh

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Abstract- This study examines the situation of child domestic workers and attitude of child specialist about child domestic work towards ILO new standards of decent work for domestic workers among 120 child domestic workers in five selected areas of Dhaka city and 15 child specialists from five different groups. The study has been employed both qualitative and quantitative method. Findings of this study revealed that the education level of child domestic workers is very poor and the major portion (79.2 per cent) has no access to non formal education. The promising things were found by the study that (75.83 per cent) child domestic workers wish to go school and continue their study. Almost all (73.3 per cent) did not get any full day off during the week and (21.7 per cent) CDWs get rest breaks 3-4hours and alarming thing is found that (19.2 per cent) did not get any opportunity to take rest during the day.

Keywords: child domestic workers, education, child protection, ilo standards.

GJMBR-B Classification : FOR Code:150304 JEL Code: O10

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Situation of Child Domestic Workers in Bangladesh

Emadul Islam [α], Khaled Mahmud [σ] & Naziza Rahman [ρ]

Abstract- This study examines the situation of child domestic workers and attitude of child specialist about child domestic work towards ILO new standards of decent work for domestic workers among 120 child domestic workers in five selected areas of Dhaka city and 15 child specialists from five different groups. The study has been employed both qualitative and quantitative method. Findings of this study revealed that the education level of child domestic workers is very poor and the major portion (79.2 per cent) has no access to non formal education. The promising things were found by the study that (75.83 per cent) child domestic workers wish to go school and continue their study. Almost all (73.3 per cent) did not get any full day off during the week and (21.7 per cent) CDWs get rest breaks 3-4hours and alarming thing is found that (19.2 per cent) did not get any opportunity to take rest during the day. For the nature of invisibility and exploitative situation of child domestic workers almost all child specialist agreed that child domestic work is a modern form of slavery. For ensuring the decent work for child domestic workers and eliminating the worst form of child domestic work study recommend both Government and Nongovernment organizations collaboration in taking actions.

Keywords: child domestic workers, education, child protection, ilo standards.

I. Introduction

Child labour in domestic work is widespread, particularly among girls (ILO, 2012). Child domestic workers were for long an invisible group of working children. Today, they are recognized as among the most numerous of all child workers, and certainly the overwhelming category as far as girls are concerned (Black, 2005). According to estimates for 2008 by ILO Statistical Information and Monitoring Programme on Child Labour (IPEC/SIMPOC) some 15.5 million children aged 5 to 17 are in domestic work; 11.3 million (73 per cent of them) are girls (IPEC, 2011, p.28). In Bangladesh, an estimated by Bangladesh Bureau of Statistics (BBS) and UNICEF in 2006, other than the 7.4 million working in the informal sector, as many as 4 lakh 21 thousand children aged between 6-17 years are working as domestic help, of which around 132,000 are in Dhaka City alone.

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Child domestic work it remains highly neglected because of the relatively invisible nature of such work. They are often far from their families, controlled by their employer, invisible to public authorities, frequently deprived of basic rights and related social services, decent lodging and working conditions, deprived of protection from sexual harassment and mental and physical abuse. A Bangladesh Shishu Adhikar Forum (BSAF) (2010) study on the situation of domestic child workers in Dhaka city showed that almost 73 percent of child domestic workers experienced physical abuse and a significant number of children 17 percent are being sexually abuse. Almost 95 percent are abusing by their owners (Islam, 2010).

Children as young as seven years old are routinely pressed into domestic service, and despite hopes to the contrary, most are deprived of the opportunity to attend school. Child domestic workers are isolated from their families and from opportunities to make friends – and are under the total control of employers who do not necessarily have their best interest as a primary concern. Child domestic work is a child labor issue, a children's rights issue, and gender issue. It is a child labor issue as it involves economic exploitation and hazardous working conditions. It is a children's rights issue because the nature and condition of the work is unfavorable for child development. Finally, it is also a gender issue as it relates to sexual abuse, risk of sexual assault, and family perceptions about the limited value of girl's education. According to ILO estimates, domestic service is now estimated to be the single largest employment category of girls under the age of sixteen worldwide (Flores & Oebanda, 2006).

Child Domestic workers (CDW) are particularly vulnerable to violations of fundamental rights at work, given the historic links between domestic work and slavery and other forms of servitude. One of the key issues distinguishing domestic work from other types of child labour is the 24- hour nature of the job (Black, 1997, p. 10). Typically, there are no specified hours or tasks allocated to child domestic workers. They do what their employer asks them to, at any time of day or night. Other important issues children trapped in domestic child labour from a very young age are likely to have had no or insufficient access to education. At the same time, child domestic workers above the legal minimum age have a reduced chance of continuing with education.

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Children are the greatest asset of a country and their welfare should be the country's greatest interest. The children of today are the bearers of our future. They are valuable human assets. If we do not able to provide them with basic support systems which essential to child development. We are compromising the society of tomorrow this is a simple and powerful fact (Muyeed, 2008, p.55).Considering the servitude situation of domestic workers, International Labour Organization (ILO) in June 2011, arranged the International Labour Conference and adopted the Convention concerning decent work for domestic workers and a Recommendation supplementing it, also referred to as the Domestic Workers Convention (No. 189) and Recommendation (No. 201), 2011 aim to protect and improve working and living conditions of millions of workers worldwide which covers decent work conditions for domestic workers.

II. Objectives of the Study

The general objective of this study is to explore the present situation of child domestic workers in terms of ILO new Standards 2011. The specific objectives are as follows:

1. To know the educational level of child domestic workers;
2. To identify the working conditions and employment status of child domestic workers;
3. To know the perception and recommendation of specialist about child domestic work and implementing ILO new standards 2011; and
4. To identify the thought of child domestic workers about their future.

III. Methodology

Due to the exploratory nature of this study, researchers using both qualitative and quantitative research methods of data collection, namely: in-depth interviews and social survey. The study participants are primarily categorized into two groups: child domestic worker and child specialist/stakeholders. Social survey was conducted among the 120 permanent child domestic workers age between 8 to 18 years who are able to give data from six selected areas in Dhaka metropolitan city. Fifteen in-depth interviews were conducted with five groups of Stakeholders/ Specialist: Bureaucrats, University Teacher, NGO Worker, Policy Maker, and Women leader. The Interviewees were selected using snowball sampling techniques and research areas were selected purposively.

The study used semi- structure interview schedule for child domestic worker and self administrated questionnaire for Stakeholders or Specialist in primary data collection. Three interviewers were recruited to collect data from child domestic workers and researchers are personally conducted face to face interview with Stakeholders or specialist. Interviewers were trained before conducting the actual interview. It should be noted that the final interview schedule (IS) and self administrated questionnaire were developed using a step by step process. At first, the primary IS and questionnaire was developed based on the literature and in consultations with the expert. Before finalizing the IS, a pilot test was also carried out among 10 potential participants. Based on the insights of the pilot test, the interview schedule (IS) was finalized.

The data collected through the survey and in-depth interview from primary sources has been compiled for both qualitative and quantitative analysis. Researchers used Statistical Package for Social Sciences (SPSS) software for analyzing the quantitative data and presented statistical analysis result in tables and graphical formats. In qualitative analysis researchers analyzes data by organizing it into categories on the basis of themes, concepts, or similar features, and examined the relationships among concepts. Instead of using real name of the participants, letters were assigned (e.g., A, B, C and so on) to maintain anonymity.

IV. Findings

a) Distribution of Child Domestic Workers (CDWs) Based on Education

According to the constitution of the people republic of Bangladesh primary education is mandatory for all citizens. But this provision does not reach to those children who are joining work before their time. They are far from formal education. Data given by child domestic workers shows (Table1) that a significant number (26.7 per cent) of respondents never been at school and them just getting elementary education and only can read and write and very few (5.8 per cent) are illiterate. The table also shows that (25 per cent) respondents have primary education and the observing thing is that (30 per cent) respondents did not continue their study after primary level.

Table 1 : Education of the Child Domestic Worker

Education	Frequeny	Percent
Illiterate	7	5.8
Can sign only	14	11.7
Can read and write	32	26.7
Primary	30	25.0
Drop out (after primary)	36	30.0
Others	1	0.8
Total	120	100.0

b) Access to Non Formal Education of Child Domestic Worker

According to International Labor Organization (ILO) (2011) new standards of decent work for domestic worker Article 4(2) mentioned that- "Each Member shall take measures to ensure that work performed by

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domestic workers who are under the age of 18 and above the minimum age of employment does not deprive them of compulsory education, or interfere with opportunities to participate in further education or vocational training." The study result shows on (Table 2) that only few (20.8 per cent) respondents are stated they have access to non formal education like several local NGOs provide. The significant number of respondent (79.2 per cent) mentioned that they have no access on non formal education. In terms of ILO new standards it is proved that a major portion of CDWs far from education. The promising thing is found the study shows on (Table 2) that (75.83 per cent) respondent wish to go school and continue their study. In contrast (24.16 per cent) of respondent frustrated and angered with their life and did not show interest to go school again.

Table 2 : Child Domestic Aides Access & Wishes go to Non Formal Education

Variables	Access	Wishes to go School
Yes	25 (20.8)	91 (75.83)
No	95 (79.2)	29 (24.16)
Total	120 (100)	120 (100)

c) Employment Contract and Salary of Child Domestic Worker

According to International Labor Organization (ILO) (2011) new standards of decent work for domestic worker Article Seven mentioned that-the employment contract, types of work, hours, remuneration, paid annual leave, and daily and weekly rest periods, and working place address should be clearly written in accordance with national laws, regulations. The survey study found that (100 per cent) of respondent they did not conduct any written contract before joining the work and their job contract is oral. It is mentioned that child domestic work is considered as an informal sector of job and owner can easily hire them through the motivation of parents some way. In addition to lack of knowledge and ignorance of law worker parents they did not think to do written contract before sending their children in domestic aids.

In terms of job performance of child domestic worker the remuneration is very low. Most of the time owner gave money to guardians not in worker hands. In the field work time several child worker mentioned that they did not know anything about their salary only mother knows. (Figure 1) shows that the highest numbers (38.3 per cent) of respondent monthly salary are between 500-1000 and (25 per cent) worker salary are between1100-1500. Only few respondent (3.3 per cent) get 2500 or above salary per month. The important thing is shows in figure that (12.5 per cent) respondent only get food and cloth did not get any salary and (9.2 per cent) worker did not know anything about their salary.

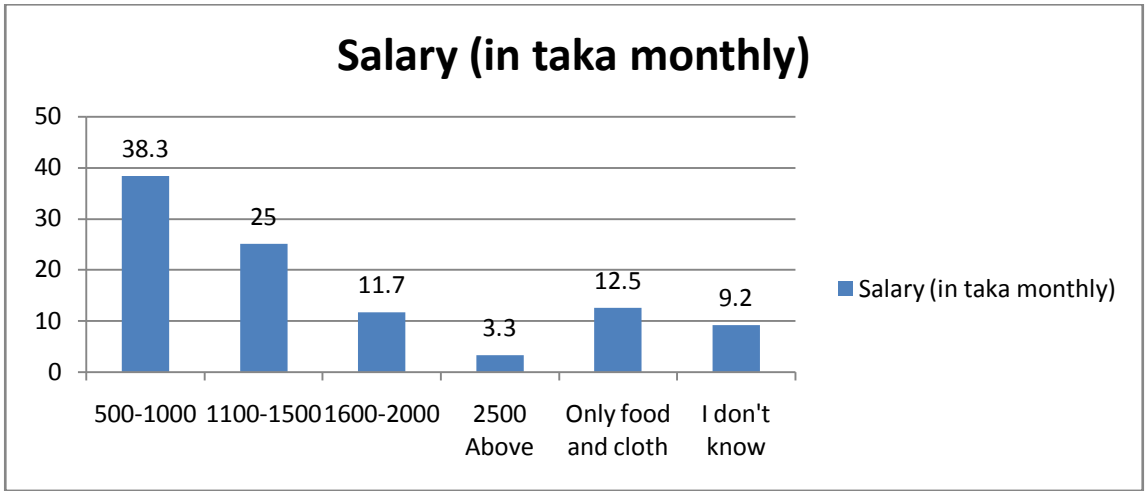

Figure 1 : Monthly Salary of Child Domestic Worker

d) Time Required to wake up in the Morning, Sleep at Night and Rest Breaks of CDWs

Successful child development is totally depending on sound sleep and familial care. Without the family care and child friendly social environment children physical, mental and cognitive development are not happened successfully. According to World Health Organization (WHO), one adult person should sleep at least 8 hours in a day and for children sleeping hours should be more. The comparative analysis of three figures (Figure 2, 3 & 4) shows that 64.7% CDWs wake up between 6-7am in the morning and 51.7% sleep 12pm or later at night and 46.7% get rest less than 2 hours a day. The charts also show that 17.5% CDWs wake up 5am or before, 18.3% wake up after 7am in the morning. In addition to 35.8% CDWs go to sleep between 10pm-11pm and only12.5% sleep before 10pm at night. 21.7% CDWs get rest breaks 3-4hours and alarming thing is that 19.2% did not get any opportunity to take rest during the day. In terms of wake up, sleep

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and rest breaks of CDWs most of the worker did not get chance for sound sleeping in their required age. Child specialist view in this aspect is that lack of sleeping creates long terms negative impact of children body and mind. Those are highly risk for eye problem and schizophrenia and they are always containing bad tamper in their mind.

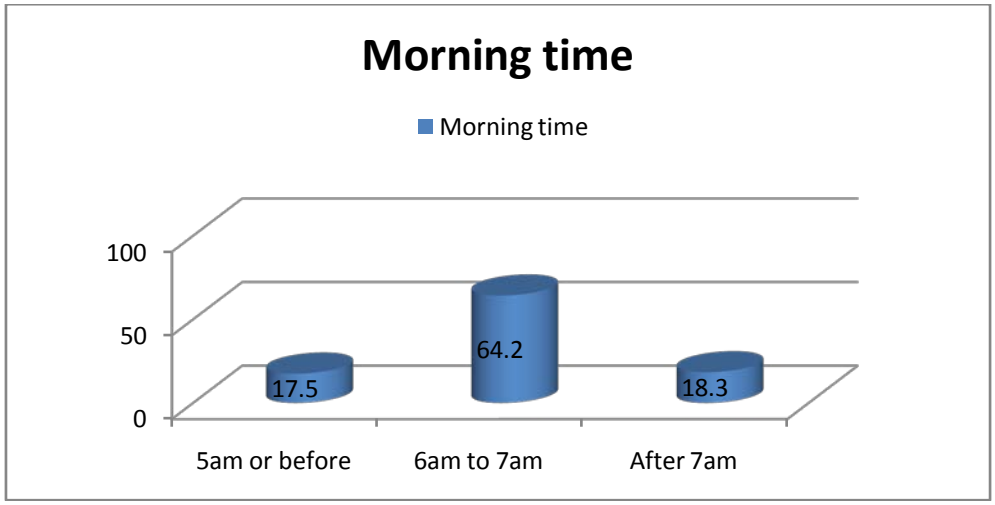

Figure 2 : Times Required Getting Up in the Morning

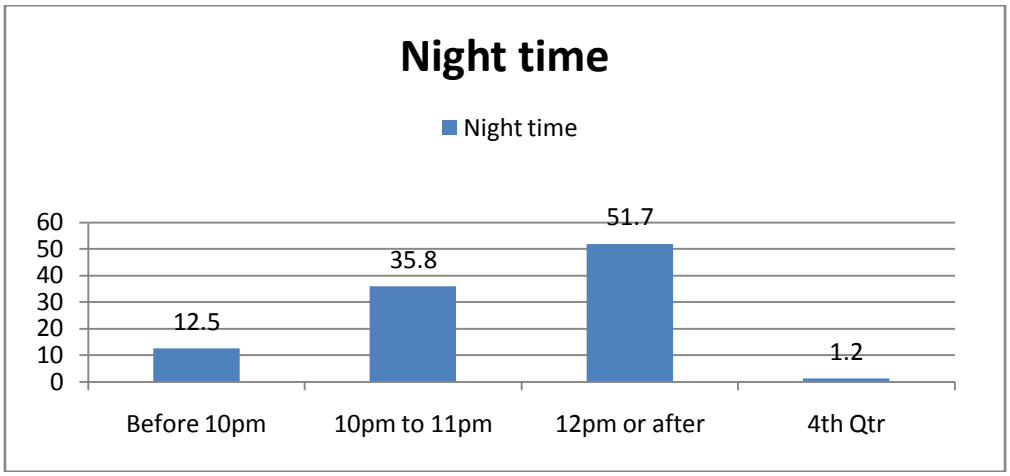

Figure 3 : Times Required Sleeping at Night

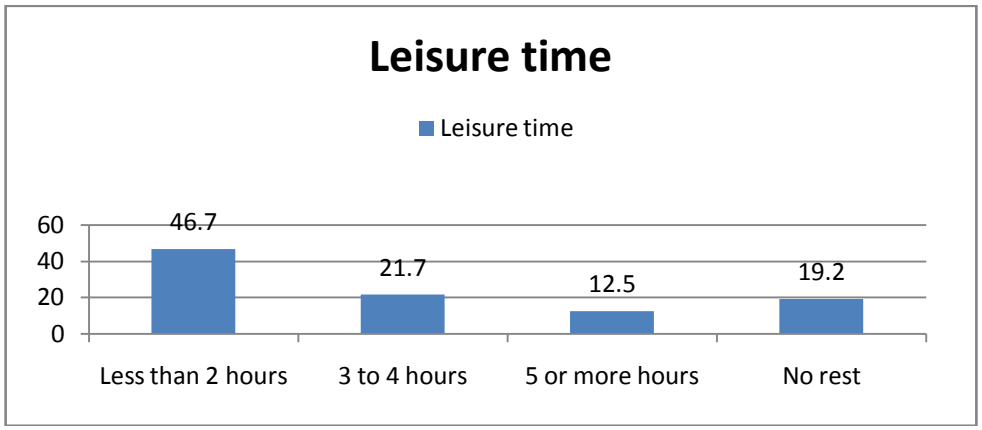

Figure 4 : Rest Breaks during the Day

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e) Day off and Annual Leave of Child Domestic Worker

According to International Labour Organization (ILO) (2011) new standards of decent work for domestic worker article ten mentioned that- "Each Member shall take measures towards ensuring equal treatment between domestic workers and workers generally in relation to normal hours of work, overtime compensation, periods of daily and weekly rest and paid annual leave in accordance with national laws, regulations or collective agreements, taking into account the special characteristics of domestic work." The new standards specified also that weekly rest shall be at least 24 consecutive hours. The study found that only few worker are get full day off during the week. Data given by CDWs shows on following table that the highest number of worker (73.3 per cent) did not get any full day off during the week. Only few workers (26.67 per cent) are get day off during the week. The promising thing is found the study shows in (Table 3) that the highest numbers (60.8 per cent) CDWs get annual leave in contrast rest of them did not get annual leave. In terms of ILO new standards children who work in domestic aid they are get day off and annual leave some extent but only few workers get this not all.

Table 3 : Child Domestic Workers Opinion on Full Day off during the Week & Annual leave

Variables	Day Off	Annual Leave
Yes	32 (26.67)	73 (60.8)
No	88 (73.33)	47 (39.2)
Total	120 (100)	120 (100)

f) Living Arrangement and Nature of Bedding of Child Domestic Worker

The serious discrimination has been found in child domestic worker living place and bedding condition. Although the CDWs are staying with owner family but they did not treated as a member of the family most of the nature. The owner's family members are staying in their own living room and own bed besides the CDWs are staying empty of house like drawing room, kitchen, veranda etc. Data found through the survey it is observed that the significant number (50.00 per cent) of child domestic workers are sleeping at night in drawing room and only (26.7 percent) has separate room for staying but it is like empty place of house. The (Table 4) also shows that a few respondents they are staying at kitchen (11.7 per cent) and veranda (11.7 per cent.

Table 4 : Nature of Living Place of Child Domestic Worker

Sleeping place	Frequency	Percent
Separate room	32	26.7
Drawing room	60	50.0
Kitchen	14	11.7
Veranda	14	11.7
Total	120	100.0

The following (Figure 5) shows that the highest numbers of respondent (42 per cent) are sleep at mat in floor and (34 per cent) flooring with metrics. Only few respondents (8 per cent) are stated that they have separate cot for sleeping. Child specialist views in this aspect that child who had experienced of discrimination and unhygienic living condition from their family or others their emotional development would not occur successfully. As a result they will suffer depression and their socialization will not occur normally like others children.

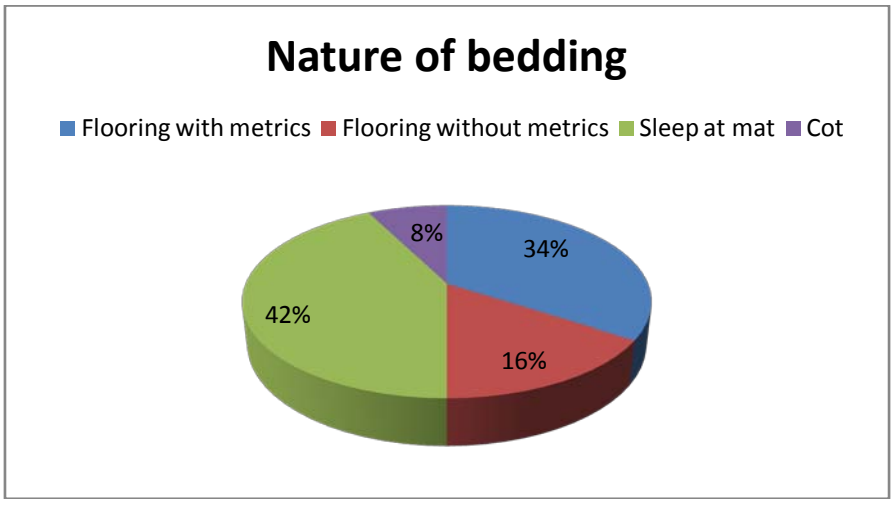

Figure 5 : Nature of Bedding of Child Domestic Worker

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g) Child Domestic Workers Future Taught

The study observed that majority of child domestic workers age more than twelve years. According to Erikson psychosocial theory in this stage the curiosity of knowing about outside world is being developed in children mind and tried to make friendship with others children and wish greater freedom. If this stage is successfully passed children become hopeful for their future and being industries otherwise they feel inferior which negatively effect on children emotional development. In terms of Erikson theory children in domestic aides did not get opportunity to fulfill their demand. So failures of the fulfillment of their demand their emotional development hamper seriously which is also proved by the given data of CDWs. The study observed based on the CDWs given data that shows (Table 5) out of 120 respondent 46 workers stated that they have no dream and most of respondent uses word 'I don't know'. The rest of respondent who stated they have dreamed about their future, they did not want to continue their present job wish to good life. The following (Table 5) shows that a major portion (44.59 per cent) worker wishes better life and second highest (40.54 per cent) neglect their present job and wish any kind of job except domestic work.

Table 5 : Future Taught of Child Domestic Workers
N= 74

Variable	Frequency	Percent
Hope of better life	33	44.59
To build a house	02	2.70
My child will be educated	07	9.45
Wish to see family happiness	06	8.10
Wish to back to the school	11	14.86
Good husband and happy family	12	16.21
Better work except domestic work	30	40.54

h) Findings based on Child Specialist Views of Child Domestic worker

In order to get the views on child domestic workers through survey, researchers also conducted fifteen in-depth interviews with five groups of Stakeholders/ Specialist: (including Bureaucrats, University Teacher, NGO Worker, Policy Maker, and Women leader). In this part researchers are tried to analyze child specialist opinion in qualitatively and presented creating the similar feature and theme.

i) Child Domestic Work as a form of Modern Slavery

The subsequent international human rights standards and concepts have, both in their definition and interpretation, recognized child domestic labour situations as a contemporary form of modern slavery. Slavery is a system under which people are treated as property to be bought and sold, and are forced to work (Brace, 2004). Different opinions have been obtained from child specialist about child domestic work as a form of modern slavery. Most of the respondent agreed that child domestic work is contemporary form of modern slavery. According to League of Nations' 1926 (Blagbrough, 2008, p. 46) Slavery Convention, which considered slavery to encompass "any or all of the powers of ownership" (Article 1(1)) and which called for the "abolition of slavery in all its forms" (Article 2(b)). This international standard thus broadened the definition of slavery beyond that of chattel slavery to encompass practices which are similar in nature and effect - which have been taken to include issues such as forced labour, servitude and trafficking. In terms of forced labour child domestic worker most of nature they are bound to do some work which they did not wish to do. One child specialist views in this aspect in her word that-

> *"I am not pleased with the number of families who use children as domestic helpers nor am I happy about the number of agencies which place children as domestic helpers. I do consider the use of domestic Child-workers as a form of modern slavery"*

The long working hours and types of work child domestic worker did and their abusive situation considered that it is the changing form of ancient slavery. But child specialist views in this matter that all child domestic worker did not face abusive situation. They believe if they are in abusive situation and have not any right to make any choice than it will call slavery. In this regard one bureaucrat (Respondent B) stated that in his word-

> *"I may agree that child labour in the domestic activities is a form of modern slavery. However, if the child labourers are given reasonable salary, are not tortured them. We should not consider it as slavery."*

A significant number of child specialist views on child domestic work slavery that they did not agree with this opinion. They are considered child domestic worker is one type of restricted work. One of respondent (Respondent O) of the study stated that in his word-

> *"I think domestic child worker is not as a formed of modern slavery. Because of they have to right to discuss their work whenever they want. I think it is one kind of restricted work where they have no independency"*

It is difficult to define child domestic work is a form of slavery. Because of the concept of slavery is covered extreme situation of people where they live not as human being and threat as a personal property. The ancient slavery system is considered as a stigma of civilization. So child specialist view in this aspect did not relate child domestic work with concept of slavery and sometimes they believe that the present situation of child domestic worker in Bangladesh did not match with the universal definition of slavery. For instance one of

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child specialist who is secretary of government (Respondent A) stated that in his word-

"I do not agree with this comment that child domestic work as form of slavery. He stated that one of the popular definitions of slavery is that 'it is a system under which people are treated as a property and forced to work.' In this sense domestic child workers cannot be treated as slaves in the modern form .Except some extreme cases domestic child workers in our society, are not treated as property or are forced to work."

j) Reason Behind to Hire Girls for Domestic Work

Child domestic work sector is considered as a female dominated occupation. The observation of the study found that the owner is encouraged to hire girl for domestic aids than boy. All of child specialist mentioned that the common reason, the taboos in society that girls are suitable for household or inside work and boys are perfect for outside work. Another important reason stated a major portion of child specialist that girls are introvert and loyal than boys. One of respondent (D) said that-

"Employer hire girl child because girl children are seemed to be more suitable for household works. Moreover they remain most of the time within the four wall of the house. Parents send their girl child for domestic work because they think their children will be safer and well in terms of foods, security etc in an affluent family."

In other word Respondent (E) stated -

"Employers are interested to engage female children in their houses as girls seem to be the more loyal and attentive than boys"

Another important reason behind to girls to become domestic works is safety of marriage. Parents are thinking that if their girls are doing work she also able to send money to them and the owner will be help to arrange marriage. But the study observe that girls who are join in domestic work their thinking about present job is stigma for them and wish to keep hide. The socio-economic condition of family is also the main barer for girl join in domestic aids. Most of the owner thinking is like that girl's workers are satisfied with less payment and easy to maintain and control than boys worker. The parents are CDWs prefer to send their girls children for household work because they are seems that their boys are capable for assisting in agriculture or outside work.

k) Opinion Regards to Impact of Long Working Hours on CDWs Physical and Mental Health

The survey findings showed that there are no specified hours or tasks allocated to child domestic workers in domestic work. They do what their employer asks them to, at any time of day or night. Almost all respondent agreed that long working hours are not good for children and it is not favorable for their mental and physical development. Long working hours will put stress in their mind. They also need time for playing and study. If they do not get time to study and play it will make hindrance to their physical growth. They also need to spend quality time on socializing, if they do not get that they cannot grow as social human being.

One respondent (G) of the study stated that-

'The long working hours impact the children's physical health in that their body and mind are subjected to increased stress and more prone to disease and dysfunction."

Overworks in very early age makes negative impact of child domestic workers growth and development. It hampers the natural growth of physical and mental health. It will reduce the potentiality of person and leads to permanent disorder.

l) Perception of Existing Laws of Bangladesh to Ensure the Legal Rights of Child Domestic Workers

The fundamental rights of the citizens including the children are spelled out in the Constitution of the Peoples Republic of Bangladesh. Articles 11, 14, 15, 16, 17, 18, 19 and 20, constituting the fundamental principles of state policy of the Constitution have laid emphasis on ensuring compulsory primary education for the children as well as adopting special measures for the children who are physically and mentally challenged. The Constitution has guaranteed the fundamental rights of citizens in Articles 27, 28, 29, 31, 34, 37, 38, 39, 40 and 41. Particularly, forced labour is completely prohibited and access to legal remedy is assured in case of violation of fundamental rights (MLE, 2010, p. 06). The Government of Bangladesh has ratified 33 Conventions related to labour issues including the United Nations Convention on the Rights of the Child (UNCRC) and ILO Convention No. 182 (Worst forms of Child Labour). The government also adopted a marvelous policy named National Child Labour Elimination Policy 2010. In terms of existing law the child specialist has given different opinion. Some have noticed that government has enough laws to protect children which also cover CDWs from abuse and exploitation. Others respondent mentioned that laws are inadequate and law cannot do anything first need to change people's mind and making social awareness against child labour. One of respondent stated that-

"Law cannot do anything in this matter. Because of there are laws, but no implementation. Social awareness is the most important point. If the rich people and elite of the society does not come forward this problem never and ever be solved"

So implementation is important. Because of every law is bad if it is not enforced. Child specialists believe that there is proper law, but there are gaps in knowing, obeying and implementing law. One respondent comment stated in this matter-

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"The legal protection for any vulnerable group in the country may not be considered as inadequate. What is lacking is that some of the employers are not properly aware of the strictness of the law and worker did not know about their rights and law."

The respondent also agreed that law is existed but did not able to ensure protection of child domestic worker. Their abusive situation in their working place made them highly vulnerable and their evident are most of the nature ignored by law or not able to reach the benefit of law. So all of child specialist recommended that to revise the existing and ensure proper protection for child domestic workers.

m) Perception about How to Implement ILO (2011) New Standards to Ensure Decent Work for Child Domestic Workers in Bangladesh

Domestic child worker issues have received major concerns in national and international level. The International Labour Organization (ILO) has been given attention to this issue and arranged ILO 100th convention on Decent work for Domestic Workers 1st June 2011 to 17th June 2011 in Geneva. This convention adopted new standard in the light of decent work for Domestic Workers in terms of age, working hour, leisure, remuneration, job contract and security etc. The new ILO standard is considered as landmark treaty for child domestic worker. Like other ILO convention Bangladesh also ratified this convention. So Bangladesh is ethically bound to follow the new ILO standards about decent work issues of child domestic workers. Child specialist perception in this aspect that most of the respondent agreed that Child domestic work is not possible to eliminate in a day but important thing is that to ensure the decent work situation for them. Moreover they also stated that without the creating alternative it does not possible to rehabilitate a big portion of unskilled worker. The society and economy of the state is also important thing in this matter. But if the government have well wish to alleviate child domestic work than it is may possible. The important thing is that the ILO also believes that it does not possible to alleviate child domestic work immediately. So ILO made a standard which ensure the right of CDWs. In the perspective of Bangladesh to implement this standard the respondents of the study are given different suggestions. Those are depicted below-

One policy maker (Respondent H) stated that-

"It will be difficult to eliminate child domestic labour from a developing country like Bangladesh. Nor is it desirable. I believe that extensive awareness programs should be taken to sensitize the employers of CDWs towards their responsibility in terms of law."

Another respondent of the study also given emphasis on awareness issues that social awareness is most important factor to ensure decent work for CDWs. He stated that if responsibility does not come from the self will nothing can change the system. A major portion of the respondent given emphasize on creating new job facilities for them and NGOs initiative. The important thing also found by the study that almost all respondent stated that the government should be more sincere about the implementation of ILO standards, but citizens also should mentally ready to cooperate with government, GO and NGOs should work partnership way and arranged mass campaign, workshop, seminars for raising awareness among the people. The significant suggestion found the study given one respondent that the government initiative and willingness is important for ensuring decent work and abolishing child domestic work. She mentioned civil society, NGOs, child welfare organization and other countries create pressure to government to take initiative for implementing ILO new standards. In her word-

"The organizations of NGOs and Child Welfare organizations need to unite to publish the numbers and circumstances of these child-workers and solicit the assistance of other nations to bring pressure upon the Bangladesh national leaders. This can also become a real positive source of public and international relations, as Bangladesh become one of the international leaders in this area."

V. Discussion

Child domestic labour has only recently come to the forefront of the international debate as potentially one of the most widespread forms of child labour (ILO, 2011, p.28). The International Labor Organization (ILO) has been given emphasis domestic work issue and arranged ILO 10th convention on decent work for domestic workers 1st June 2011 to 17th June 2011 in Geneva. This convention adopted new standard in the light of decent work for domestic workers in terms of age, working hour, leisure, remuneration, job contract and security so on. The ILO new standard has been considered as land mark treaty for child domestic worker. Domestic work is an oldest occupation and whilst children played an important part. Since a proportion of these children, mostly girl, are very young, and they are join in work before their time. They have no specific task that they do, but they are bound to do all types of work that their owner ask them to do. As a female dominated occupation this jobs are highly risk for different types of abuse and unspecified time of work it's considered as worst forms of child labour. Most specifically the common hazards must also be seen in association with the denial of children's fundamental rights, such as access to education and health care, the right to rest, leisure, play and recreation and the right to be cared for and to have regular contact with their parents and peers.

The ILO new standards has been given emphasize on child domestic workers education and

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vocational training. The study findings shows that child domestic labour in Bangladesh serious denial schooling of child domestic worker, a significant number of (26.7 per cent) CDWs never been at school. Other things those who are been at school their education level is very low and they just get primary (up to Fifth grade) education, after that drop out from education. The promising things found by the study that (20.8 per cent) CDWs have access to non formal education which is providing different NGOs in Bangladesh. On the other hand a major portion (79.2 per cent) CDWs has no access in non formal education. Data was given by participants of the study that (75.83) wish to go to school.

In terms of ILO new standards the study found serious discrimination of living, salary, leisure and remuneration of child domestic workers. The respondents of the study stated that they get very low salary, and their job nature is 24 hours, they wake up before anybody of the owner family and going to bad after them. They have no specific leisure time, but they get little time to take rest and always to ready to follow owner order.

The qualitative findings of the study show that, considering the exploitative situation of child domestic workers in their work place most of the participants agreed child domestic work as modern from of slavery. On the other hand those participants who are disagree with this opinion, they believe that child domestic work is a worst form of child labour and one type of restricted work. Almost all of key informant of the study agreed that owner encourage to hire girls for domestic worker because they are easy to handle and loyal to owner. They also mentioned that long working hours and abusive situation has been negative impact on CDWs physical and emotional development. To protect the right of child domestic workers child specialist mentioned that the implantation of existing law is important than adopting new laws. They also agreed revising the existing laws in a favors of child domestic workers rights. To implementing ILO new standards all of child specialist gave emphasize on Government and NGOs partnership initiative on creating awareness among the people about eliminating child domestic work.

VI. Conclusion

The constitution of Bangladesh has been asserted in Article 32 (1), "States Parties recognize the right of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development". Children involved in domestic work often become victim of both economic exploitation and maltreatment. Certainly not all child domestic workers experience these risks; and the work itself is not necessarily dangerous and inhumane. But there are household employers who are dangerous or inhumane. The study findings show that the overall situation child domestic workers in their workplace are exploitative and serious violation of the Article 32 (1) constitution of the people republic of Bangladesh. In terms of ILO new standards the present situation of CDWs are worst. The dream of most child domestic workers is better life except from domestic work. For ensuring decent work for child domestic workers and implementing ILO new standards the following recommendation take in consideration:

- Find or establish mechanisms that would allow child domestics' access to basic education that will include mixing work with education for those who, for various reasons, are unable to stop working. This could be done by establishing afternoon and part-time schooling opportunities.
- Establish informal education programmes for girl domestics who dropped out or never attended formal education.
- Establish emergency response for child domestics when they are victims of abuse.
- Reinforce existing family protection mechanisms. Even if their child is away, families have their own child protection mechanisms and develop coping mechanisms.
- Community-based intervention should take into account for raising awareness among the parents for discourages to send their child in domestic work.
- Strengthen secure communication channels between children and parents that can be used to monitor the child's well-being and work conditions.
- Government and NGOs collaboration approach should take into account for implementing ILO new standards.

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Inter-Sectoral Linkages in Jordan Economy: (Input-Output Analysis)

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Abstract- The purpose of this study is to investigate the inter-sectoral linkages and the effects of each sector onother sectors in Jordanian economy by using Input and output tables for the years: 1987, 2000, and 2009.To facilitate the comparison process between sectors the researcher assembled and aggregated the each table to 15 sectors. This study applied Input and Output technique to determine the leader sector which has highest backward and forward linkages.

Keywords: input and output tables (iot), jordanian input and output tables (jiot), backward linkages, forward linkages, key (leader) sector.

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"Inter-Sectoral Linkages in Jordan Economy: (Input-Output Analysis)"

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Abstract- The purpose of this study is to investigate the inter-sectoral linkages and the effects of each sector onother sectors in Jordanian economy by using Input and output tables for the years: 1987, 2000, and 2009.To facilitate the comparison process between sectors the researcher assembled and aggregated the each table to 15 sectors. This study applied Input and Output technique to determine the leader sector which has highest backward and forward linkages.

This study found that there is a discrepancyin the values ofthe backward and forward linkages of each sector among the three years. However, the manufacturing and agriculture sectors have had the strongest backward and forward linkages in 2009.

Keywords: input and output tables (iot), jordanian input and output tables (jiot), backward linkages, forward linkages, key (leader) sector.

I. Introduction

Backward and forward linkages are descriptive measures of the economic interdependence of industries in terms of magnitude transactions. Industries with strong backward and forward linkages are termed as key sectors, and play an important role in the development strategy of a country.

Linkages analysis is essential because it shows the importance of each sector within the economy. It used to examine the interdependency of production structures, and it was introduced by Rasmussen (1956), Chenery& Watanabe (1958) and Hirschman (1958). Since that many different methods were improved and expended for measuring linkage coefficients (Bhalla and MA, 1990; Heimler, 1991; Sun, 1998). One of the well-known methods for analysis interdependency between sectors is backward and forward linkage analysis using Input Output Tables.This study will use table for the year 2000 which was built by the researcher using the actual data, and the updated table forthe year 2009 which built by the researcher using RAS method, finally, the table for the year 1987 which built by Jordanian government.

II. Research Problem and Objectives

There are no such studies analyzing inter-sectoral relations by using IOT in Jordanian Economy, which debilitating decision-making process to motivate economic growth. The lack ofanalytical studiesof the Jordanian economy is interested in the role of the economic sectors in stimulating the new investments in other sectors, whether these sectors are using the outputs of other sectors(backward linkages) or by providing what the other sector need from it (forward - inkages).

The aim of this study to analyze the inte sectoral linkages in Jordanian Economy to determine the most influential economic sectors in the economy, which steer the polices toward true decision making to direct investments on leader sectors that most affected according to the economic priorities in Jordan if increasing the economic growth through motivate the investments and production in other sectors.This will stimulate all sectors through the effects of direct and indirect effects generated from the backward and forward linkages of all sectors which encourage economic growth and thus positively impact on income and employment levels in the community.

III. The Importance of Research

Jordanian economic is suffering since the end of eighties in the last century from several economic problems which obstruct its growth and progress; from weakness of output and inability to meet local needs in various forms, to debt burden which absorbsa significant portion oflocal resourcesto meet its obligations.

Linkage analysis can be quite useful to assess the effectiveness of development strategies,which aim to strengthen the supply chain process among industries, and to provide a way to the policy makers to allocate resources for getting the best outcome. Having information about the priority sectors, suitable policies can be navigable towards those sectors for higher growth of the economy, and can be taken careby the weaker sectorsfor further improvement. For these reasons and to highlight the strengthen of every sector, to help the decision makers to betterment the Jordanian Economy.

IV. Methodology

This study was primarily carried out on compiled Input and Output Tables for Jordanian economy to three different years. The table for year1987 was produced by the Jordanian Department of Statistics. The table for the year 2000 built by the researcher depending on the actual data, while the

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table for the year 2009 built by the researcher by updating 2000 table using RAS method.

For analytical purposes, the original Input and Output Tables consisting of different number of sectors are aggregated into 15th sectors based on International Standard Industrial Classification (ISIC3.1).(United Nations, 2002).

The direct input coefficient matrix constructed by dividing each flow shown in the Input and Out put Table on the total of column. Alternatively, when each flow is divided on the total of row, adirect output coefficient matrix obtained. Direct input and output coefficient matrices are used to establish the direct linkages. Direct Input and Output coefficient matrix inverted to obtain the total Input and Output coefficient matrix respectively. The elements of an inverse matrix represent both direct and indirect flows between each sector and other sectors.

V. Theoretical Framework

Jordan represents a small open economy with few naturalr esources and limited manufacturing. If the Jordanian Economic shows growth that means the debt burdens would be reduced, also by improving the economic growth it will effect on reducing the unemployment rates and poverty.

Input and Output analysis has been widely used to assess sectoral economic performance and production interdependence. This paper used compiled Input and Output Tables since 1987s for Jordanian Economy to analyze the significance of inter-sectoral relation and to determine the highest ranking sectors in term of backward and forward linkages. Also itused this technique of Input and Output to explore the structural change of the Jordanian Economy, and to answer both questions: "Who receives from whom?" and "Who gives to whom?".

Moreover it intended to serve three main purposes. First, to analyze the inter-sectoral linkages in Jordanian Economy to determine the most influential economic sectors,and to provides a guide to the construction and interpretation for forecasting purposes. Second, it provides details of the way in which the inter-sectoral linkages tables can be used. Finally, it provides a means of answering some of the questions often requested by input and Output practitioners.

VI. Literature Review

After 1941, when Leontief introduced the first I-O Tables for the Americane conomy, the Input and Output analysis became fundamental means for studying inter-sectoral linkages of sectors of any economy. Consequently, the I-O Tables began to be used quite early by Poul N.Rasmussen (1958) and Chenery and Tsunehiko Watanabe (1958) for establishing the linkages between sectors of the economy. These linkages were studied on the side of inputs (the side of supply) to each sectors (backward linkages)as well as on the side of outputs (the side of sales) of an each sector to other sectors (forward linkages) (Lovrenc Pfajfar and AlenaLotric Dolinar 2000).

Rasmussen (1956) proposed to use the column (or row) totals of the Leontief inverse, (I - A)-1, to measure inter-sectoral linkages. The backward linkage, based on the Leontief inverse matrix, is simply defined as the column totals of inverse matrix. Similarly, the corresponding forward linkage can be defined by reference to the row totals of Leontief inverse matrix.

An empirical study of Input and Output linkage analysis was proposed by Hirschman (1958), who used the Rasmussen linkage indicators to identify "Key or Leader Sectors", in an economy which will promote growth to the follower sectors. The way of linking key sectors and induced sectors is the development of backward and forward linkages between these sectors. These ratios measure the degree of interdependence of different sectors only; to what degree a sector uses inputs from other sectors. Although the linkage is a causal concept and this is the truth, the sector developed strictly as a result of a linkage to a leading sector only, one could also find some sectors with high ratios not due to linkage effects but only due to sectoral interdependence. In this case, the sector did not develop as a result of linkages to another sector but rather in a synonymous with it.

As early as 1958 Hirschman (Hirschman (1958) introduced the analytical concept of the key sector of the economy as a sector with forward and backward linkages above average. In the literature numerous modifications of the basic procedures for establishing the key sectors and their use on data on different economies can be found (Strassert (1968), Hazari (1970), Laumas (1975), Bharadway (1976), Jones (1976), Schultz (1970, 1977), Rao and Harmston (1979), Hewings (1989), Dietzenbacher (1992)). Each of them has its advantages and disadvantages, which mean it has advocates and critics (Lovrenc Pfajfar and AlenaLotric Dolinar 2000).

VII. Backward Linkages

Through these linkages we can estimate the reliance of one sector on other sectors by view production input side, it measures the volume of using one sector to produce the other one, which means increasing the production for the sector affected by high backward linkages will provoke new industries to provide this sector by its input production.

These direct backwards linkages measured by using coefficient matrices (A), it is summation of the elements of the column for the target sector (Chenery, 1958), by using the data of Input Output of the Jordanian economic we have been reached results as

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shown in Table (1), these linkages shows (reflect, express) about the proportion of intermediate inputs (Intermediate Consumption; goods and services) for sector j to the total production for the same sector, which means:

$$Db_j = \sum_{j=1}^{n} \frac{xij}{Xj} = \sum_{j=1}^{n} a_{ij} \quad (1)$$

Whereas $Db_{j:}$ the value of direct backwards linkages, while the relationship $\frac{xij}{Xj}$ is the value of coefficient for sector j.

From Table (1) we see changes in ranks of some sectors, for example, agriculture sector moved from rank 8 to rank 1, this reflects the increasing of agriculture sector dependency on the output of other sectors specially industry, which denotes to technological progress in agriculture sector by using mechanism rather than rely on primitive means in agriculture, while manufacturing and construction sectors rank moved just one step forward, the most important sectors which significantly their ranks moved backward electricity and Retail & wholesale Trade.

But this measure direct backward linkages only without thoughtfulness the indirect effects resulting from expansion in the production of any of the productive sectors,

In the structure of Input and Output, the sales of sector A to sector B recorded as forward linkage for sector A and backward linkage for B but one of these effects which could result in an impact was taken into consideration in this scale. (Jones, 1970)

To measure the direct and indirect effects we should use Leontief inverse matrix [(I-A)-1], we can calculate the direct and indirect effects for backward for any sector through the total of column elements in this matrix, (Yotopoulos and Nagent, 1976), according to the equation:

$$DIB = \sum_{j=1}^{n} (I-A)^{-1} \quad (2)$$

After applying this quotation on the Jordanian economy we can see the results in the table (1).We should notice here that the value of these linkages is the same value of output multipliers. From Table (1) it is noted that the ranks of some sectors have remained pretty much the same except little bit changes, as in construction sector its rank changed in indirect backward linkages from 3 to 2 in direct and indirect backward linkages in the year 2000.

These measures have not been highly accepted among economists, as they thought some of them inaccurate, so some minor adjustments have been involving in the type which is using averages, which is a compared the average of all linkages (direct and indirect) for sector j with overall average for all sectors (Rasmussen, 1957), in following mathematical formula:

$$Ib_i = \frac{1/n}{1/n2} \cdot \frac{\sum (I-A)-1}{\sum \sum (I-A)-1} \quad (3)$$

The numerator represents the average of direct and indirect needs to meet the increased of final demand by one unit from sector j products, whereas the denominator refers to average total needs in macro economy to meet the increased of final demand by one unit, means, the aggregation of increased final demand in all sectors is one unit. (Hajy, 1985)

By applying this quotation on the Jordanian economy data we reached to the direct and indirect backward linkages Index to the Jordanian Economy which is shown in Table (3).

The direct and indirect backwards linkages for sector j are high if the value of index exceed more than one, if it was 1>Ibj, whereas in the revers situation weak, and when the value is more than one it means the sector needs more relatively volume production to cope the increasing in final demand on sector j products by one unit, so sector j will be strong leader for other sectors compared with other sectors.

From Table (3) we can see that the backward linkages in Jordanian economy is weak in general, in 2009 the sectors have linkages are agriculture and manufacturing, however, the manufacturing sector characterized in high stability in backward linkages, we can explain why agriculture sector has been characterized because of depending on using chemical industries products as pesticides and veterinary drugs and treatments more than it was in 1987.

VIII. Forward Linkages

The focal idea for forward linkages is to study the impact of increased output that occurs or may occur in the used sectors when there is a change in its provider sector of production inputs. (Bulmer, Thomas, 1982)

Also it measures the impact of forward linkages sectors dependency to other sectors when production of this sector is used as inputs production in other sectors, high impact of these linkages to a particular sector that includes the expansion in this sector will generate the power stimulate all sectors to enlargement. In other words, the impact of forward linkages happens when particular sector products used as inputs in production one sector or more from other sectors which generate an incentive to do new activity or increase production for specific sector which means these linkages stimulate new investment through creation excess supply. (Zahran, 1968)

We can find the value of direct forward linkages through coefficient production matrix (O) which is a result of dividing each cell in the matrix of intermediate

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demand on total final demand (intermediate and the final which is the total of row), the value of the direct forward linkages for sector i is a total row for this sector in the coefficient matrix production (Yotopoulos and Nugent, 1973), it can be formulated mathematically:

$$Df_j = \sum_{i\,1}^{n} \frac{xij}{Xi} = \sum_{j\,1}^{n} o_{ij} \qquad (4)$$

Where Dfj : the ratio of intermediate demand to total demand Xi for a particular sector, it has been estimated for Jordanian economy and the result shown in Table (2).

Perhaps the most prominent can be seen from this table is the change in rank of some sectors, as example, agriculture sectors which moved from 7th rank to the third rank, and mining and querying from 6th rank to the first rank, but this reflects the only direct forward linkages and doesn't in consider the indirect effects which happened in the economy when the investment increased.

We can measure the traces of direct and in direct forward linkages by using Leontief output matrix (I-O)-1 through using production coefficient (the intermediate demand proportion to total demand including final demand), (Carter & Brody, 1970), the direct and indirect forward linkages equal the total rows of invers Leontief output matrix, it can be formulated mathematically:

$$Tf_i = \sum_{i=1}^{n} (I - O) - 1 \qquad (5)$$

The matrix (I-O)-1 express the increasing in output of i sector to encounter the needs of growing final demand by one unit from products of every sector (Boucher, 1976), after applying this formula on Jordanian economy the result have been shown in Table (2).

From this table we can say that the comments mentioned above with respect to the change of sectors ranks almost remain the same, the forward linkages happens or could happens when sector production i use or maybe use as intermediate output for one sector or more in national economic sector.

As mentioned when talked about backward linkages there are several criticisms for direct and in indirect style, so some modifications have been made to this indicator, new index was calculated using averages and average of averages hosted by the economists Rasumussem (Al-Hammadi & Hannoush, 1992), it might be called the index for direct and indirect forward linkages, it can be formulated mathematically:

$$IF_i = \frac{1/n}{1/n2} \cdot \frac{\sum (I - O) - 1}{\sum \sum (I - O) - 1} \qquad (6)$$

The numerator refers to average of the total of row which belongs to i sector in invers Leontief matrix output, which measures the total impact on sector i when the final demand grows for all sectors by one unit, the increases in investments in sector i it will motivate the production of sectors which used the products of this sector by increasing because it gained the advantage of availability intermediate production (Bulmer-Thomas, 1982).

Whereas the denominator states the average of averages for all sectors. After using above equation and applying it on the Jordanian economy data, the results shown in Table (3), it provides with index for sensitivity of dispersion of forward linkages.

The sectors have a strong forward linkages if the index for any sector greater than one IFi<1, and the vice versa in case IFi>1 (Laumas, 1976). We can notice from Table (3) that the electricity sector and the construction was marked by strong forward linkages in 1987, while they declined in 2000, mining and querying became the stronger forward linkages only, it is a logic reflects the fact after establishing potash factory that relay on basis of main products of this sector from potash and phosphate. With regard to the change in sectors order, ex-analysis about direct forward linkages and indirect forward linkages still largely true.

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Annex

Table 1 : Backward Linkages

NO.	Sector Name	Direct Backward Linkages						Direct and Indirect Backward Linkages					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, forestry and fishing	0.310	8	0.776	2	0.431	7	1.467	8	3.242	1	3.802	1
2	Mining and Querying	0.318	6	0.455	6	0.390	8	1.475	6	2.022	8	1.734	9
3	Manufacturing	0.350	4	0.726	3	0.717	1	1.525	4	2.854	3	3.427	2
4	Electricity	0.445	1	0.586	4	0.449	5	1.671	1	2.626	4	2.133	5
5	Water	0.312	7	0.449	7	0.440	6	1.474	7	2.135	7	2.058	6
6	Construction	0.362	3	0.788	1	0.610	2	1.584	2	3.023	2	1.771	10
7	Retail & wholesale Trade, and repair maintenance	0.335	5	0.257	12	0.254	11	1.493	5	1.456	13	1.441	13
8	Restaurants&Hotels	0.380	2	0.473	5	0.557	3	1.561	3	2.196	5	2.951	3
9	Transport	0.289	10	0.424	9	0.286	10	1.426	10	1.921	9	1.894	7
10	Communication	0.072	15	0.185	14	0.128	15	1.106	15	1.299	14	0.898	14
11	Financial & insurance	0.192	13	0.290	11	0.159	14	1.273	13	1.493	11	0.818	15
12	Real estate and Business services	0.159	14	0.091	15	0.180	13	1.243	14	1.223	15	2.420	4
13	Education	0.238	11	0.213	13	0.214	12	1.343	11	1.477	12	1.485	12
14	Health and social work	0.194	12	0.446	8	0.471	4	1.276	12	2.149	6	1.769	8
15	Other services	0.305	9	0.360	10	0.326	9	1.443	9	1.809	10	1.638	11

Sources:
1. Al Zoubi, Osama, Construction and Analysis Input–Output Tables for Jordan Economy in 2000, 2009, Baghdad university, PHD thesis, not published.
2. Department of Statistics, Input-output tables 1987, not published.

Table 2 : Forward Linkages

No.	Sector Name	Direct Forward Linkages						Direct and Indirect Forward Linkages					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, forestry and fishing	0.221	7	0.705	4	0.827	3	1.376	7	3.036	3	3.561	2
2	Mining and Querying	0.255	6	1.921	1	1.647	1	1.402	6	6.975	1	5.981	1
3	Manufacturing	0.562	3	0.877	2	0.916	2	1.840	3	3.207	2	2.727	5
4	Electricity	1.862	2	0.741	3	0.098	14	4.576	1	2.969	4	2.503	6
5	Water	0.062	13	0.700	5	0.137	12	1.082	13	2.742	5	2.871	4
6	Construction	1.931	1	0.228	10	0.596	6	3.392	2	1.336	13	1.062	12
7	Retail & wholesale Trade, and repair maintenance	0.161	11	0.217	11	0.215	9	1.241	10	1.615	9	1.598	8
8	Restaurants&Hotels	0.028	14	0.208	12	0.189	10	1.043	14	1.349	12	1.774	9
9	Transport	0.183	9	0.254	9	0.771	4	1.259	9	1.624	8	1.694	7
10	Communication	0.358	4	0.352	8	0.243	7	1.464	4	1.565	10	1.082	11
11	Financial & insurance	0.325	5	0.428	6	0.234	8	1.443	5	1.683	7	0.922	15
12	Real estate and Business services	0.177	10	0.385	7	0.762	5	1.237	11	1.702	6	3.368	3
13	Education	0.072	12	0.098	14	0.099	13	1.110	12	1.104	14	1.110	10
14	Health and social work	0.023	15	0.205	13	0.139	11	1.025	15	1.401	11	0.979	13
15	Other services	0.209	8	0.017	15	0.015	15	1.265	8	1.031	15	0.934	14

Sources:

1. Al Zoubi, Osama, Construction and Analysis Input–Output Tables for Jordan Economy in 2000, 2009, Baghdad university, PHD thesis, not published.

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Table 3 : Index of Power Dispersion of Backward and Forward Linkages

No.	Sector Name	Index of Power Dispersion of Backward Linkages						Index of Power Dispersion of Forward Linkages					
		1987		2000		2009		1987		2000		2009	
		Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
1	Agriculture, forestry and fishing	0.687	8	1.048	1	1.229	2	0.556	7	0.911	3	1.068	4
2	Mining and Querying	0.691	6	0.654	8	0.561	8	0.566	6	2.092	1	1.794	1
3	Manufacturing	0.714	4	0.923	3	1.354	1	0.743	3	0.962	2	1.518	2
4	Electricity	0.782	1	0.849	4	0.216	14	1.848	1	0.891	4	0.961	6
5	Water	0.690	7	0.690	7	0.124	15	0.437	13	0.823	5	1.102	3
6	Construction	0.742	2	0.977	2	0.911	4	1.370	2	0.401	13	0.169	15
7	Retail & wholesale Trade, and repair maintenance	0.699	5	0.471	13	0.466	10	0.501	10	0.484	9	0.479	9
8	Restaurants&Hotels	0.731	3	0.710	5	0.887	5	0.421	14	0.405	12	0.563	8
9	Transport	0.668	10	0.621	9	1.018	3	0.509	9	0.487	8	0.928	7
10	Communication	0.518	15	0.420	14	0.290	11	0.591	4	0.469	10	0.324	12
11	Financial & insurance	0.596	13	0.483	11	0.265	12	0.583	5	0.505	7	0.277	14
12	Real estate and Business services	0.582	14	0.395	15	0.782	6	0.500	11	0.511	6	1.011	5
13	Education	0.629	11	0.478	12	0.481	9	0.448	12	0.331	14	0.333	11
14	Health and social work	0.597	12	0.695	6	0.234	13	0.414	15	0.420	11	0.443	10
15	Other services	0.676	9	0.585	10	0.530	7	0.511	8	0.309	15	0.280	13

Sources:

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Exchange Rate and Macroeconomic Performance in Nigeria: A Causal Post Structural Adjustment Programme Investigation

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Abstract- This paper investigates the causal relationship between exchange rate, balance of payment, external debt, external reserves, gross domestic product growth rate and inflation rate in Nigeria post Structural Adjustment Programme (SAP). Annual time series data 1987-2011 were used as the research sample period. The data were sourced from CBN Statistical Bulletin and Annual Reports of various years. We applied the ADF and PP unit root tests to check the stationarity of the variables. Gross domestic product growth rate and external reserve were stationary at both levels I (0) and I (1). The Johansen cointegration test, equation estimation and Granger causality tests were applied. Johansen cointegration result shows that there exists a long-run equilibrium relationship among the indicators. The Granger causality test between the dependent and independent variables shows a unidirectional causality from exchange rate to BOP, external reserves and gross domestic product growth rate. The independent variables indicate a unidirectional causality from gross domestic product growth rate to external reserve.

Keywords: *Exchange Rate, Macroeconomic Indicators, Cointegration.*

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Exchange Rate and Macroeconomic Performance in Nigeria: A Causal Post Structural Adjustment Programme Investigation

Tamunonimim A. Ngerebo-a [α] & Reginald C. Ibe [σ]

Abstract- This paper investigates the causal relationship between exchange rate, balance of payment, external debt, external reserves, gross domestic product growth rate and inflation rate in Nigeria post Structural Adjustment Programme (SAP). Annual time series data 1987-2011 were used as the research sample period. The data were sourced from CBN Statistical Bulletin and Annual Reports of various years. We applied the ADF and PP unit root tests to check the stationarity of the variables. Gross domestic product growth rate and external reserve were stationary at both levels I (0) and I (1). The Johansen cointegration test, equation estimation and Granger causality tests were applied. Johansen cointegration result shows that there exists a long-run equilibrium relationship among the indicators. The Granger causality test between the dependent and independent variables shows a unidirectional causality from exchange rate to BOP, external reserves and gross domestic product growth rate. The independent variables indicate a unidirectional causality from gross domestic product growth rate to external reserve. On the whole this paper has provided empirical evidence that there is a causal relationship between exchange rate and some macroeconomic indicators in Nigeria post SAP. These indicators however impact on the determination of exchange rate in Nigeria. Certain policy implications arise from this finding. It demonstrates the need for monetary authorities to learn from past exchange rate management and come up with a monetary policy framework that complimes the existing exchange rate policy and ensures stability.

Keywords: Exchange Rate, Macroeconomic Indicators, Cointegration.

I. Introdcution

Exchange rate is the ratio between a unit of one currency and the amount of another currency for which that unit can be exchanged at a particular time. Exchange rate plays a vital role in a country's level of trade, which is critical for every free market economy in the world. It is therefore not surprising that, exchange rate is among the most watched, analyzed and government manipulated macroeconomic indicator. Most countries attempt to moderate their domestic currency fluctuations by imposing restrictions on exchange rate movements (Benita and Lauterbach, 2007). It is a key macroeconomic measure in the context of general economic reform programmes and because of its importance government takes active part in its determination. Specifically, it is important as the connection between the price systems of countries, as price in the allocation of real resources among tradable and non-tradable sectors, as a promoter or otherwise of imports and exports, and as an instrument in the design of the balance of payment programme of countries.

Economic history has shown that there are two common concepts of exchange rate namely nominal exchange rate and real exchange rate. The nominal exchange rate (NER) is a monetary concept which measures the relative price of two countries' moneys or currencies, e.g., naira in relation to the U.S. dollar (e.g., N1 28.00: US$ 1.00) and vice verse. The monetary concept informs on how much the price level of international goods has risen/fallen relative to domestic prices as a result of changes in the exchange rate. Real exchange rate (RER), on the other hand, is the concept that measures the relative price of two goods – tradable goods (exports and imports) in relation to non-tradable goods (goods and services produced and consumed locally). There is a link between the two concepts in that changes in the NER can cause short-run changes in the RER. For example, a NER devaluation (depreciation will have the effect of depreciating the RER). It is important to note that since the introduction of the Second Tier Foreign Exchange Market (SFEM) under SAP in Nigeria in 1986, the first definition of exchange rate has been most pronouncedly used.

Analysis of Nigeria's exchange rate movement from 1970-2005 showed that there exists a causal relationship between the exchange rate movements and some macroeconomic indicators, though not directional. Consequently, it has been contensious to conclude that the depreciation in exchange rate predicts changes in other macroeconomic variables such as inflation, GDP growth, and fiscal deficit/GDP ratio, and vice versa.

This paper attempts to improve on existing literature by investigating empirically (1) the relationship between some macroeconomic indicators and exchange rate in Nigeria post-SAP by estimating a model that would help explain the short and long-run behavior of exchange rate vis-a-vis movements in the

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mentioned indicators, and (2) if a causal relationship exists between exchange rate andthe indicators.

II. Theoretical Framework

a) Exchange Rate Management Before 1986

Exchange rate policy in Nigeria has undergone substantial transformation since post-independence era when the country operated a fixed exchange rate system up to the early 1970s and then from 1986 when a market-based exchange rate system was introduced in the context of the Structural Adjustment Programme (SAP). Before 1973, Nigeria's exchange rate policy was in consonance with the IMF par value or fixed exchange system. The Nigerian currency had its exchange rate largely subjected to administrative management because it was not a traded currency. The exchange rate was dictated by the fortunes or otherwise of the British Pound Sterling up to 1967 when the pound was devalued and thereafter to the dollar. The naira was adjusted in relation to the dollar following the breakdown of the IMF par value system in December of 1971. In 1978, the naira was pegged to a basket of 12 currencies comprising Nigeria's major trading partners. This policy was abolished in 1985 in favour of quoting the naira against the dollar. The main objectives of exchange rate policy during this period were to: (a) equilibrate the balance of payments; (b) preserve the value of external reserves; and (c) maintain a stable exchange rate. Although, a number of ad-hoc measures were adopted to realize the policy objectives, it can be said that economic objectives played a major role in determining the exchange rate. Thus, throughout the 1970s, except 1976 and 1977, the nominal exchange rate appreciated every year. The policy encouraged heavy reliance on imports which ultimately led to balance of payments problems and depletion of external reserves. Nevertheless, up to the time of SAP, exchange rate policy encouraged the overvaluation of the naira as reflected in real exchange rate appreciation, particularly in the 1970s (Obadan, 1993b, 1994 and 1995). A major factor in the real exchange rate appreciation was the sharp increase in oil prices and foreign exchange inflows. The exchange rate generally mirrored movements in oil prices. The real appreciation of the exchange rate encouraged imports and capital flight, discouraged non-oil exports and helped to sustain the manufacturing sector's over dependence on imported inputs. The agricultural sector was seriously undermined. Annual production of major cash crops (cocoa, rubber, cotton, and groundnut) fell by 42, 29, 65 and 64 per cent, respectively, between 1970 and 1985 (Osaka, Masha, Adamgbe, 2003: 329).

b) Exchange Rate Management Post SAP

This can be examined from the perspective of exchange rate policy objectives, strategies and frameworks, movements and their effects. The core objectives of the adjustment and reform programme include the adoption of a realistic foreign exchange rate policy, stimulation of domestic production and broadening of the supply base of the economy, improved trade and payment liberalization and privatization of public sector enterprises among others (Soludo, 1993: 51). Under SAP, the exchange rate strategy was to float the naira and establish an institutional framework for its trading in a market-determined environment. SFEM was expected to evolve an effective mechanism for exchange rate determination and allocation of foreign exchange in order to guarantee short-term stability and long-term balance of payments equilibrium. SFEM began as a dual exchange rate system which produced the official first-tier exchange rate and the SFEM or market determined exchange rate.

The essence of the dual exchange rate system was to avoid a deliberate uniform and sizeable depreciation of the naira but to allow it to depreciate in the SFEM while at the same time the monetary authorities would continue a downward adjustment of the first-tier rate until the two rates converge to produce a realistic exchange rate. This convergence was achieved on July 2nd, 1987 at the rate of N3.74: $1.00. But some analysts described it as forced (Ojameruaye, 1991). Essentially, the objectives of SFEM include the following: achievement of a realistic exchange rate determined by the market forces; more efficient resource allocation through the substantial reduction of fraudulent and wasteful transactions; stimulation of non-oil exports; encouragement of foreign exchange inflows and discouragement of outflows; enhanced revenue for government; redressing of the gross imbalances in rural-urban incomes and welfare; and elimination of currency trafficking and wiping out of unofficial parallel foreign exchange market. Thus, the ultimate expectation was that the exchange rate policy and management actions would lead to an improvement in the BOP position and ensure large degree of convertibility of the naira.

III. Methodology

a) Research Design

Our econometric model is with emphasis on six macroeconomic indicators, using ordinary least squares. Our choice of the OLS approach is premised on the Gauss-Markov theorem which postulates that the least squares technique is the best linear unbiased estimator (BLUE), with which straight line trend equations could be estimated. The sample consists of 25 annual data from 1987 to 2011 obtained from CBN Statistical Bulletin of 2013 and Annual reports of various issues.

b) Model Specification

The functional form on which our econometric model is based is:

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EXCHR = f(BOP, EXTDB, EXTRE, GDPGR, INFLR)

$$EXCHR_t = \beta_0 + \beta_1 BOP_t + \beta_2 EXTDB_t + \beta_3 EXTRE_t + \beta_4 GDPGR_t + \beta_5 INFLR_t + U_t \quad \text{Eq. 1}$$

The following is the logarithm form of the above equation aimed at achieving stationarity of the data (Hydroyannis and Papapetrou, 2001; Maysami et al., 2004).

$$\ln EXCHR_t = \beta_0 + \ln\beta_1 BOP_t + \ln\beta_2 EXTDB_t + \ln\beta_3 EXTRE_t + \ln\beta_4 GDPGR_t + \ln\beta_5 INFLR_t + U_t \quad \text{Eq. 2}$$

The following are a priori expectations of the coefficients of the model

$\beta1, \beta3, \beta4 > 0; \beta2, \beta5 < 0$

Where:

EXCHR = Exchange rate is annual exchange rate (naira/US dollar) valued in rate and the dependent variable.

BOP = Balance of payment represents the annual balance of payment as a percentage of gross domestic product.

EXTDB = External debt represents annual external debt as a percentage of gross domestic product in per cent.

EXTRE = External reserves represents annual external reserves as a percentage of gross domestic product in per cent.

GDPGR = Gross domestic product growth in percentage

INFLR = Inflation rate represents annual inflation rate in percent.

Ln = natural logarithmic notation

β_0 = Slope coefficient

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = Coefficient of the parameters

U = Error or stochastic term

IV. Presentation of Results and Analyses

Table 1 : Unit Root Test Results

Variables	ADF T-STATS	PP T-STATS	STATUS
LOGEXCHR	-4.640537	-4.640862	
1%	-3.752946	-3.752946	
5%	-2.998064	-2.998064	I (1)
LOGBOP	-5.562671	-14.00106	
1%	-3.769597	-3.752946	
5%	-3.004861	-2.998064	I (1)
LOGEXTDB	-3.384258	-3.355161	
1%	-3.752946	-3.752946	
5%	-2.998064	-2.998064	I (1)
LOGEXTRE	-5.698587	-9.179070	
1%	-3.769597	-3.752946	
5%	-3.004861	-2.998064	I (1)
LOGGDPGR	-5.602115	-17.21477	
1%	-3.788030	-3.769597	
5%	-3.012363	-3.004861	I (1)
LOGINFLR	-7.216071	-11.04521	
1%	-3.752946	-3.752946	
5%	-2.998064	-2.998064	I (1)

Source: Authors compilation from Eviews 7.0 printout

To guard against spurious result arising from non-stationarity behavior from level form, this study cautiously checked the properties of the variables used in the model via the Augmented Dickey Fuller (ADF) test and the Philip-Perron (PP) test. As observed from both ADF and PP test results in table 4.1, all the estimating variables were stationary at their first difference. However, gross domestic product growth rate (GDPGR) and inflation rate (INFLR) were stationary at both level and first difference. Therefore, the null hypothesis of non- stationarity was rejected in all the series. Following our results, all the variables were used in the model at their first differences.

a) Johansen and Juselius Multivariate Cointegration Test

Given the default with the Engel and Granger (1987) cointegration test, this study adopted the Johansen and Juselius (1990) multivariate cointegration technique.

There are two test statistics for cointegration under the Johansen approach and they are formulated as:

$$\lambda_{(trace)}(r) = -T \sum_{i=r+1}^{k} \ln(1 - \lambda i)$$

and

$$\lambda_{max}(r, r+1) = -T \ln(1 - \lambda_{r+1})$$

where r is the number of cointegrating vectors under the null hypothesis and λ_i is the estimated value for the ith ordered eigenvalue from the Π matrix. Intuitively, the larger is λ_i, the larger and more negative will ln(1- λ_i) be and hence the larger will be the test statistic.

λ_{trace} is a joint test where the null is that the number of cointegrating vectors is less than or equal to *r*.

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λ_{max} conducts separate tests on each eigenvalue, and has its null hypothesis that the number of cointegrating vectors is *r* against an alternative of *r* + 1. Where the eigenvalue statistics results of Trace and Maximum differ, the result of the Trace should br preferred (Alexander, 2001).

Table 2 : Johansen Test for Cointegration Result

HYPOTHESIS	TRACE STATISTIC λ_{trace}	CRITICAL VALUES (95%)	MAX EIGENVALUE STATISTIC	CRITICAL VALUES (95%)
r≤ r = 0	199.5669 (0.0000)	95.75366	90.86176 (0.oooo0	40.07757
r ≤ r >1	108.7051 (0.0000)	69.81889	50.92612 (0.0000)	33.87687
r ≤ r > 2	57.77899 (0.0045)	47.85613	28.21174 (0.0415)	27.58434
r ≤ r > 3			22.09206 (0.0366)	21.13162

Note: Number of Cointegrating vectors: 3. Figures in parenthesis are probability Values (MacKinnon-Haug Michelis, 1999 p-values.

Source: Authors compilation from Eviews 7 result

The Johansen cointegration test result is presented in table 4.2. The trace statistic either rejects or does not reject the null hypothesis of no cointegration among the variables. If Trace statistic > the critical value, then reject Ho and accpt H1 (there are r+1 cointegration vectors), where H0: r=0, 1, 2, …g; and the test conducted sequentially until the H0 is no longer rejected (Brookss, 2008:352). In our test H0: r=0, H0: r=1 and H0: r=2 are rejected at the 5% level of significance hence we find that our variables are not cointegrated. The final number of cointegrating equation with two lags is three. This result indicates that there exists a long run equilibrium relationship between exchange rate, balance of payments, external debt, external reserves, gross domestic product growth rate and inflation rate in Nigeria post SAP.

Table 3 : Equation Estimation result

Dependent Variable: LOGEXCHR
Method: Least Squares
Date: 09/18/13 Time: 18:13
Sample (adjusted): 1989 2011
Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.180253	0.356592	0.505488	0.6232
LOGBOP	0.043038	0.030819	1.396490	0.1901
LOGEXTDB	0.324027	0.095645	3.387816	0.0061
LOGEXTRE	0.028418	0.093652	0.303445	0.7672
LOGGDPGR	-0.047854	0.032018	-1.494606	0.1631
LOGINFLR	-0.115135	0.039380	-2.923709	0.0138
LOGEXCHR(-1)	0.708263	0.097918	7.233243	0.0000
LOGBOP(-1)	0.083903	0.031084	2.699238	0.0207
LOGEXTDB(-1)	-0.160066	0.085211	-1.878481	0.0871
LOGEXTRE(-1)	0.096676	0.079578	1.214863	0.2499
LOGGDPGR(-1)	-0.048882	0.033213	-1.471751	0.1691
LOGINFLR(-1)	0.023142	0.037962	0.609609	0.5545

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R-squared	0.988448	Mean dependent var	3.941071
Adjusted R-squared	0.976897	S.D. dependent var	1.091755
S.E. of regression	0.165944	Akaike info criterion	-0.448457
Sum squared resid	0.302911	Schwarz criterion	0.143975
Log likelihood	17.15725	Hannan-Quinn criter.	-0.299462
F-statistic	85.56834	Durbin-Watson stat	2.075212
Prob(F-statistic)	0.000000		

Source: Eviews 7 printout.

The result of our equation estimation after adjustment is presented in table 4.3. This result can also be used in determining the short-run relationship amongst the variables (Brooks, 2008: 43).Based on this result, the overall performance of the model after adjustment has a good fit. Both the R-squared (98.8 percent) and the adjusted R-squared (97.6 percent) were very much above average. The adjusted R-squared valuesuggests that the independent variables were able to explain 97.6 per cent of the variation in exchange rate (dependent variable). The Durbin-Watson statistics (2.075212) is a little higher than the traditional benchmark of 2.0 in the model so we don't have to worry about serial correlation problem. The F-stat (F-stat 85.56834, p=0.00000) of the model is statistically highly significant suggesting that, collectively, all the variables have a significant impact on exchange rate. Inflation rate (INFLR), external reserves (EXTRE), balance of payment (BOP) had their expected signs while gross domestic product growth (GDPGR) and external debt (EXTDB) had negative and positive signs respectively contrary to their a priori expectation.

Also the coefficients of the independent variables were examined to determine the nature of their relationship with the dependent variable (Exchange rate). The coefficient of inflation rate is negative (-0.115135) and significant (p=0.0138) in the short run. The coefficient of gross domestic product growth rate (-0.047854) is negative and insignificant (p= 0.1631) in the short run. External debt (EXTDB) is positive (0.324027) and significant (p=0.0061) in the short run. External reserves (EXTRE) is positive (0.028418) and insignificant (p=0.7672) in the short run while balance of payment (BOP) is positive (0.043038) and insignificant (p=0.1901) in the short run also. The insignificant relationship between exchange rate, balance of payment, gross domestic product growth rate, and external reserve could be as a result of the length of time (long run) it takes for changes in these independent variables to reflect on the overall domestic economy.

b) Granger Causality Test

Given the basis and the use of granger causality tests in the determination or classification of the variables into independent and dependent, based on the direction of flow of influence (Order & Fisher, 1993; Marin, 1992; McCarville and Nnadozie, 1995; Darat, 1996; and Pomponio, 1996), as well as the result of the Pairwise Granger test as presented in Table 4.4, we reject the null hypothesis if the probability value is more than 5% otherwise we do not reject the null hypothesis if the probability value is less than 5%.

Table 4 : Pairwise Granger Causality test Result

	F-STAT	PROB
EXCHR→ BOP	8.11944	0.0096
EXCHR → EXTRE	7.73896	0.0112
EXCHR → GDPGR	5.94805	0.0242
EXTRE → BOP	8.41714	0.0085
BOP → EXTRE	4.66701	0.0425
GDPGR → EXTRE	6.06991	0.0229

Source: Authors compilation from Eviews 7 output

The Granger causality test between the variables suggests a unidirectional causality from exchange rate to balance of payments, external reserves and gross domestic product growth rate. This shows that there is a causal relationship between the variables. Exchange rate follows its counterparts in the short run and there exists a lead-lag relationship between them. The causality test between the independent variables indicates bidirectional causality between external reserves and balance of payments implying that past values of both variables have predictive ability in determining their present values. A unidirectional causality between gross domestic product growth rate and external reserves implies that gross domestic product growth rate has a predictive ability on the present value of external reserves.

V. Conclusion

It can be concluded that there is a causal relationship between exchange rate, balance of payment, external debt, external reserves, gross domestic product growth rate and inflation in Nigeria post-SAP. These indicators somehow impact exchange rate determination in Nigeria post-SAP. Constant changes in exchange rate framework, rather than foster a better market efficiency, has only succeeded in creating instability in the markets. The parallel foreign exchange market has not been eliminated. The poor exchange rate performance may not be unconnected with the unfulfilled expectations concerning the role of market mechanism in determining exchange rate in our type of environment, coupled with the absence of complimentary policies, e.g. monetary, fiscal and investment policies.

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VI. Recommendation

Certain policy implications arise from the findings. It demonstrates the need for a monetary policy framework that compliments the existing exchange rate policy. On the whole, this paper has provided empirical evidence of the relationship between exchange rate, balance of payment, external debt, external reserves, gross domestic product growth rate and inflation rate in Nigeria post SAP. The results suggest a causal and significant relationship between the variables. The Johansen cointegration result demonstrates that exchange rate and these variables are cointegrated. Given this, it is important for monetary authorities to learn from past exchange rate management in order to improve on the existing framework and ensure exchange rate stability in Nigeria. It is desirable to monitor the movements in the rates so as to foster competitiveness and improve the supply of our exports.

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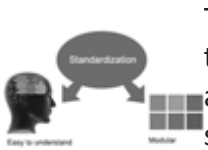

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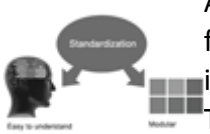

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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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