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CHAPTER 1: INTRODUCTION

1.1 *Introduction*

Offshoring in a way is the logical outcome of the strategic focus on core competence which implies that a firm should abandon functions it cannot best performed in-house to external vendors. The driving and constraining factors in offshoring are first, deconstructing itself (breakdown of the value chain), then devising appropriate interfaces between the organizationally and spatially separated functions and finally minimizing transaction costs between the entities.
Offshoring in Africa particularly in Nigeria is becoming increasingly important considering the contribution of the continent to the world economy especially now that most European countries are becoming saturated and needed expansion to the most emerging economies with vast economic potential. The country's considerable resource endowment, strategic coastal location and large internal market should allow it to become an economic power house for Africa.

1.2 *The importance of the study*

This work aims to raise awareness for Nigeria's potential as an offshoring hub in Africa, and is aimed primarily towards policy makers and potential private sectors. It addresses the questions of what Nigeria can do to take advantage of the benefits of global trade in services. How the country can brand itself as an offshoring destination for international investors. what government policies are required to ensure that Nigeria play a role in offshoring especially now that countries around the world that are investing in high value added sectors as Information and Communication Technology .Like most African nations, in order to begin on the path of rapid and sustainable development. Nigeria will have to support private sector growth and look for the diversification of the economy away from oil, opening ways for offshoring and global supply chain activities..

1.3 *Aims and objectives*

The main aim of this research project is to analyze the impact of offshoring and global supply chain on the economic growth of Nigeria.

- To identify the major drivers and why firms do offshore.
- To identify those factors that militates against the phenomena in Africa and particularly Nigeria.
- To examine the effects of some economic factors for a span of twenty years on GDPGR of Nigeria which invariably is affected by offshoring and global supply chain?

CHAPTER 2: LITERATURE REVIEW

2.1 *What is offshoring and Global Supply Chain?*

Today, the vertical integration or internalization model of business is retreating in most companies as the process of fragmenting each piece of their operations and asking how it could be deconstructed (Zaher and Zaheer,2001).And if deconstructed, in which nations the fragmented functions can best be performed. Traditionally, most companies added value in-house and in their home nation-Cell A in figure below. Today, firms adds value internally(in the home nation.[Cell A] or in fully owned foreign subsidiaries[Cell C] only to selected portions of its value chain where it determines it has “core competence”(Prahalad and Hamel,1990

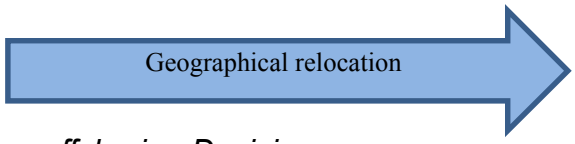

Table showing offshoring Decisions

	Home Nation	“offshore”
In-house Domestic or foreign	[A] Value of entirely in-house activities in home nation	[c] Value of entirely in-house activities within fully-owned foreign affiliates
Cooperative Domestic or foreign	[B.1] Value created cooperatively with partners(in a cooperative or strategic relationship)	[D.1] Value created cooperatively with foreign partners. Jointly with partners(in cooperative or strategic relationship
Outsourcing Domestic or foreign	[B.2] Value outsourced domestically in home nation From completely arms-length providers(in a contractual relationship)	[D.2] Value outsourced contractually from foreign providers From completely arms-length providers(in contractual relationship)

- Offshoring:[Cells(C)+(D.1)+(D.2) refers to the geographical relocation of activities outsides the home nation of the firm under any organizational arrangement, including foreign subsidiaries of the company(cell C), foreign alliance partners(D.1) or foreign contract providers(D.2)

- Outsourcing:[cells(B.2)+(D.2) refers to value added by contractual external providers, whether in the home nation of the firm(B.2) or foreign nation(D.2)

Offshoring and outsourcing phenomena is in way the logical outcome of the strategic focus on core competence which implies that a firm should abandon functions it cannot best perform in-house or at a home to external vendors or foreign countries.

Offshoring and Outsourcing-definition (adapted after UNCTAD, 2004)

Offshoring and Outsourcing definitions

	Internalized production	Externalized production
Location Home country	Domestic –in-house production	Domestic outsourcing
Foreign country Offshoring	(captive offshoring)	Offshore Outsourcing

Offshoring refers to the movement or relocation of domestic firm activities and operations abroad. Offshoring investments have become important to the economic growth and development of the white collar and services economy. It is important to recall that offshoring of manufacturing has been occurring for decades and more recent is the service offshoring which has been attracting greater attention. This which includes not just only low-value added activities but also high –value added activities. Global offshoring services (UNCTAD,20050) has reached $32 billion in 2001 and offshoring of IT –enabled services alone is estimated to increase from $1bllion in 2002 to about $24 billion by 2004 by 2007(UNCTAD,2004).Offshoring can be done internally within companies through the establishment of foreign affiliates or foreign subsidiaries (captive offshoring)(UNCTAD,2004) as well as externally via outsourcing to the third party

(typically called offshore outsourcing) and in general , I shall be taking about service offshoring.

Figure Below

Multi dimensional model of offshoring services

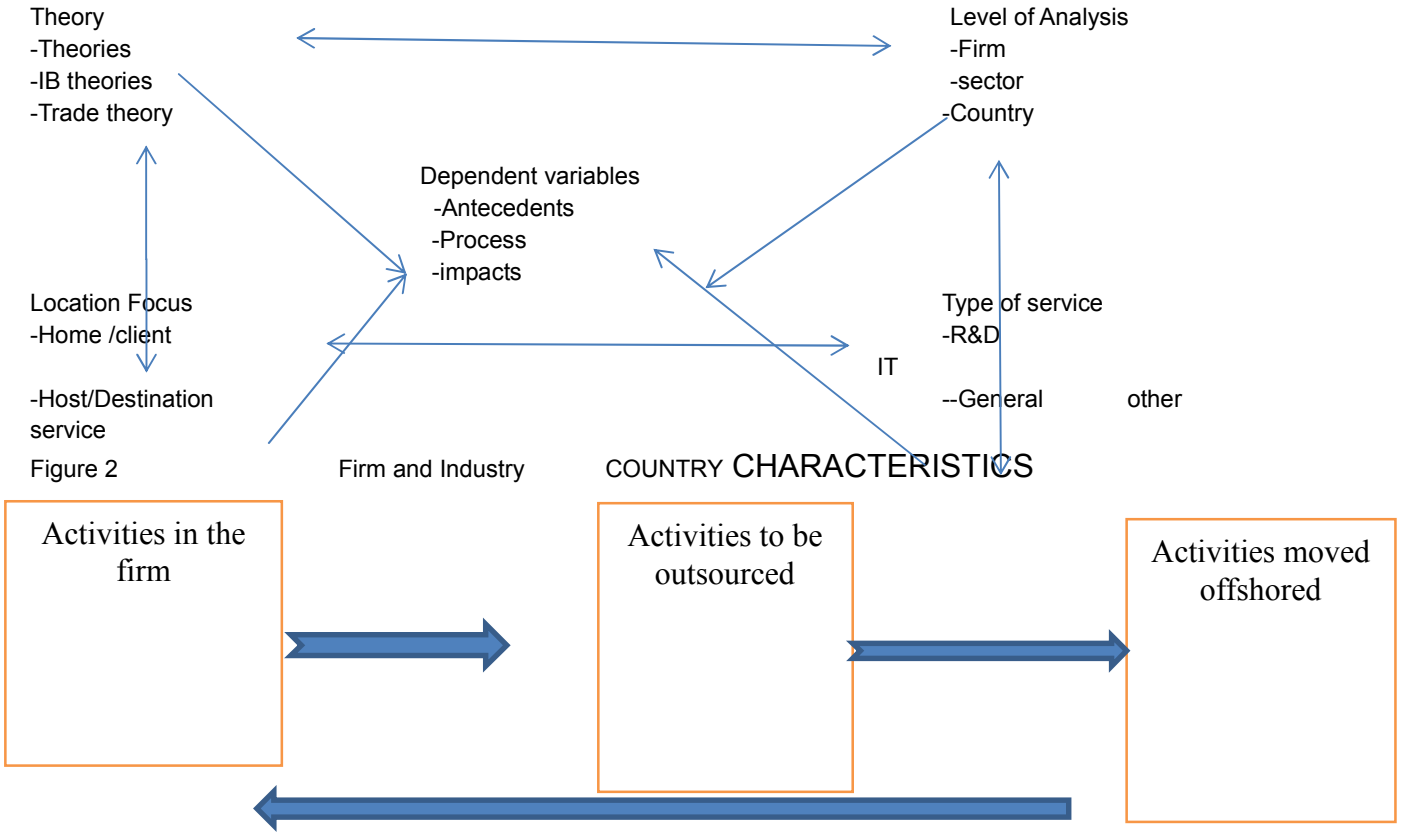

Figure 2

In this article, we offer a frame work to understand and answer the following questions, (1) what are the antecedents? Why MNEs are engaging in offshoring and what are the major drivers? (2) What are the activities to move offshoring process? (3) What are the impacts/ consequences of offshoring? (4) When should an activity be offshored? (5) How does offshoring affects the performances of MNEs, industries and countries?

With the help of multidimensional model, the raised questions could be addressed .Some companies have established their own offshore center while an increasing number have sought the services of third party logistics providers but the phenomena is not evident in some firms. This again raises the question why only certain industries are more favored than others and why certain firms choose to outsource. Multi-dimensional model helps us to analyze the offshoring decisions that would encourage a country to be part of the global supply chain.

Many overlapping perspectives exist in literature with many contrasts which explain the above questions. Several arguments from international trade, Foreign direct investment (Cal vet 1981). Offshore production and product life cycle, can be put together to answer these questions listed above, and there is no single framework that can explain the process and dynamics of offshoring. Offshoring is a complex phenomenon and analysis from technological, financial, organizational and managerial specialists try to make conclusion by saying that using a multidimensional models is far better than static one dimension model.

2.1.1 Positive feedback of outsourcing/offshoring

The gains from trade have been debated over a long time since 1776, staring with Adam Smith in The Wealth of Nations and it has been established that trade benefits both participants. Although, this old argument hold even today, extending Smith's argument to the case of offshoring; one of the benefits to the home country is the immediate cost reduction that translates to country-corporate savings. They now have access to the same products and services at a lower price and companies even exploit the advantages accruing from international trade to re-export back to their country of origin.

2.2 *What are the major drivers for offshoring?*

We can apply the multi-dimensional mode above to address the first question. Considering variables in the framework namely firm, industry and country, the above mentioned model can be applied in explaining the major drivers. Conventionally, economists tend to focus on country and industry variables while treating firm as an exogenous variable.

2.2.1 Firm level drivers

2.2.1.1 Cost drivers

Most arguments in favor of offshoring focus on transaction cost arbitrage across countries. The make or buy decision is a cornerstone for any multinational

company. Transaction cost theory argues that when the cost of transacting in the market is less than the cost of transaction within the firm, then firms would choose to outsource. A pool of activities go into the sale of finished products; from research and development to product design, from preparation and installation of machinery and production of components, to assembly, packaging, marketing, transportation, and after-sales support, a Firm must choose whether to undertake the activity in house or outsource it. There is tradeoff between the cost of running a larger and less specialized organization (in the case of internalization) and costs that rise from search frictions and imperfect contracting (in the case of outsourcing). (Williamsons (1979.1985).

Furthermore, a vertically integrated firm may face a higher cost of producing components and services, because such a firm has many divisions to manage and the organization may not benefit from the learning that comes with specializing in a single activity. In addition, search costs arise when a firm that off shores its activities and must search for a suitable partner and then provide this partner with incentives to produce inputs to its specifications. Search costs are huge and don't always end in success especially when contracting is imperfect. The decision as to why firm outsource depends on the tradeoff between the costs and the benefits between the two methods. If the agency costs outweigh the transaction costs, then it is beneficial for a company to engage in outsourcing. Although exchange rates movements do not persist long enough. Therefore, exchange rate movements cannot attribute as major driver for outsourcing.

2.2.1.2 Strategic Drivers

In addition to cost advantages, firms do undertake offshoring for non-cost reasons. (Kotabe, 1992) documents several strategic drivers such as marketing strategy, marketing performance and product policy for global offshoring. Other studies also prove that operational flexibility, quality and technology are reasons behind offshoring decisions of a firm. A survey conducted on both potential and prospective offshoring end users shows that the ten top reason for offshoring are to reduce and control operating cost ,improve company focus, gain access to world class capabilities, free internal resources and accelerate re-engineering benefits, function difficult to manage/control internally, make capital funds available and share risks .When one market faces a macro economic crisis then production can be arbitraged across the different production locations to take advantage of favorable macroeconomic conditions .A number of quality/technological advancements have also prompted MNEs to seek new market abroad , for example development of biotechnology cluster in Singapore, ICT cluster in India etc, the quality of the product and services delivered by these countries has risen to international standards(According to a survey by

(Nasscom,2003), 60 companies in India and 2 companies in China achieved CMM level 5 certification.

2.2.2 Scale considerations

The standardization of business processes has caused the birth of a new offshoring as firms do provide specialized products and services. Specializing in a particular product or services has given firms a huge market and therefore a cost advantage due to a large economics of scale and learning curve. These economies of scale are passed to multinational firms as profit advantage and therefore an important driver for offshoring .Furthermore, with the standardization of the electronic components; Original equipment manufacturers (OEMs) have developed specialized skills in manufacturing these standardized products. As a result, they absorb a huge share of the manufacturing market and this high volume of business gives them economies of scale advantages. Scale of economics further enhances their ability to reduce cost through volume accumulation realizing their products at a cheaper rate thereby making them relevant in international market.

2.2.3 Industry Level Drivers

The following are classified as industrial drivers:

2.2.3.1 Technological Change

In the last decade, the ICT industry has witnessed unprecedented growth and this has led to the innovations like internets, fiber optics, digital wireless communication systems, internet telephony and other third generation devices. This has opened channels for offshoring and outsourcing, Communication is becoming faster and more reliable, business process re-engineering digitalization offshore offices in far locations can manage the business process of MNEs.

2.2.3.2 Market structure and competition

The structure of the industry plays a significant role in a firm's decision to move its activities offshore. Under an imperfect market structure, the firm does not have any added incentive to outsource its activities therefore offshoring is less likely. But in a perfect market structure, offshoring becomes a natural choice to stay ahead of all the other competitors. However, decision also depends upon the nature of the market in the recipient country. If the recipient country's market structure is imperfect, then there may be difficulties in framing and implementing of the contractual agreements such as holdup problems. But, if the recipient country has a perfect market structure, then the level of outsourcing will be most.

Firms in a perfect market structure have a greater propensity to outsource than those in imperfect markets; level of outsourcing will be maximum if the recipient also has a perfect market structure.

2.2.4 Country Drivers

2.2.4.1 Institutional Reforms

An equally important trend in recent times is the improved efforts towards globalization in the world. The economic liberalization in the 1980s and 1990s, pursuant agreements with international institutions such as the World Bank, international monetary fund (IMF) and the World Trade Organization (WTO) have caused a fundamental shift towards open markets and free trade. These agreements have opened many of the emerging markets and lesser developed economics which have abundant skilled and low cost labor. There have been regulatory and institutional reforms in most of the developing countries. Governments are becoming friendlier as against opposing protectionist ideas a decade ago. These changes have also been an important driver for many MNEs to locate offshore centers around the world. Moreover, a company's propensity to offshore also depends to a large extend on the quality of the market supporting institutions, development of capital markets and the legal and regulatory infrastructure that the recipient country has, that is the sophistication of the public and private institutions that underpin a market economy. Most of the country that receives off shored activities lacked the proper regulatory infrastructure and posed a problem for MNEs. Smaller firms, lack of regulatory structure and corruption is a problem and plays a negative role in the decision to outsource.

2.2.4.2 Emergence of Emerging Market Multinationals (E-MNEs)

In the recent times, emerging markets which are capable of delivering products to the global expectation, have MNEs now to have the opportunity to outsource their production needs from them. For example, India's Sundaram Fasters bought an entire General Motors production line, moved it to India, and a year later became the sole supplier of radiator cap to GM's North American division (Dawar and frost1999). These Emerging Market Enterprises lacked the competency to enter the developed nation's country markets. Because of this, most of the emerging markets multinationals have become the outsourcing partners to the developed country MNEs. This is another driver for developed country firms to outsource to the emerging markets firms.

The greater the number of EMNCs, the larger is the value of outsourcing in the world.

2.2.4.3 Global competition and low inflation

With the removal of the trade barriers, countries are now more open to foreign companies and this has led to an increase in the global competition. Companies are now under increasing pressure to provide differentiated value propositions at a minimum cost. In order to meet these strategic goals, outsourcing becomes an inevitable choice available to multinationals. When a country is characterized by high inflation, there is a tendency for multinationals to hide their inefficiencies in the developed countries over a long period of time, errors can no longer be concealed away by the general price appreciation, because of this macroeconomic condition, outsourcing again comes as a natural choice to improve efficiency and compete in the economy.

The higher the level of global competition and the lower the level of inflation, the grater is the tendency to outsource.

2.2.4.4 Global demographics

With the current trend of offshoring, there are concerns about job loss and increased unemployment rates in the developed nations. However, on observing the global demographics it is argued that with the decline in the number of the active workers ,there will still be a demand for workers in the developed nations for the next fifteen years .This argument follows from the fact that the peak productivity years for an individual workers are between 25 and 55.if we predict a 5% decline in this population segment due to ageing , over the next 15 years, the demand for workers thus generated would still outnumber the number of jobs outsourced(Forrester(2004)).This implies that the cost of wages is still predicted to be higher in the developed economics that the rest of the world. Given, this information companies perceive it be cost effective in the long run to run to shift their labor sensitive requirements to an offshore center.

The larger the percentage of working age people in the demographic pattern of the developed country, the lesser is the tendency to outsource.

2.2.5 People & Culture

The decision to outsource also depends to a large extent on the cultural inclination of the home country. The cultural distance of a country, affects how a firm enters that country, and whether they are successful or not (Brakeman, Bell and Penning's 1996). There is a widespread belief that firms from culturally remote countries tend to internalize more activities as opposed offshoring. This is because they lack knowledge of local networks and the capacity to evaluate the market (Mol2002).Furthermore, the difference in the productivity and wage levels between the home and recipient countries also play an important role in the decision to externalize. Country with high productivity level may not seem attract

when compared with another with moderate productive and comparatively low wage levels. We need to understand the root causes of these difference. If the increase in the productivity is because of capital intensive technology rather than low cost then this technology can be transferred to a low cost labor country to reap the benefits of low cost as well. The dynamic perspective is observed on the long run. One has to keep in mind that as the demand for certain countries increase, the productivity and wage need not necessarily be the same low level as experienced today. Over time, the home country can become unfavorable because of various reasons like the demand, technological innovations in the home country. The decision to offshore depend on the dynamic interactions between the wage and productivity levels between the home and the recipient countries.

2.2.6 Infrastructure Environment

The physical infrastructure of a country is also an important factor in the decision to outsource. This includes road, railway and other transportation infrastructure. Further, when separated by distance, relationship management depends to a large extent on the quality and reliability of a country's telecommunication infrastructure. Developing countries, which are the primary recipients of out sourcing, are often grossly underinvested in business infrastructures and low infrastructural development has been a major hindrance for attracting foreign investors to developing country like Nigeria. The government in the road map of positioning Nigeria among the twenty biggest economies by 202020 is pursing the vision of massive investment in the provision of critical infrastructure since it is one of the prerequisite for attracting MNEs for offshoring activity.

2.3 *What activities to move offshore?*

A wide array of literature from economic and managerial perspectives argue which activities to move offshore by firms. According to transaction cost theory, it is argued that activities which are cost effective in the market should be outsourced. From management theorist's point of view, two schools of thought exist. One propagates the idea of outsourcing non-core activities, as this would allow MNEs to focus on their core activities (Hamel and Prahalad 1990, 1994) and the (Quinn and Hilmer, 1994). Another school of thought argues that MNEs cannot outsource even the non-core activities if the activities have cross product synergies in competitive markets which will put the MNEs in competitive disadvantage. Moreover if the bargaining power of outsourcing firm is more, and the asset specificity is high, then outsourcing of non-core activities is not a viable option. More so, in a multi-product, limited competition setting a firm may find it

desirable to outsource even the core activities. Example, consider a firm that has exclusive right to sell a goods in a market ,although its competitors can sell the same good in other markets and have access to similar production technology, or an environment where import restrictions and government regulations prevent competition but allow domestic producers to import intermediate goods .In these situations. MNEs can outsource the core as well as the non-core activities without any competitive disadvantage.

Based on the discussion, we conclude that there is no single standard solution that fits all MNEs. Each firm has to analyze on a case –by-case basis and the choice of activities to move offshore depends on the dynamic interactions between the firm structure, industry structure, and regulatory environment at the country level.

2.4 *When should an activity be offshored*

It has been established through Vemon's product life cycle theory that a product moves from the developed economy to the developing and least developing countries and back to the developed economy during it life cycle. This argument can be extended to answer the 'when question of outsourcing' When the product or service is in the initial growth stage, technological innovation is a critical strategic component that cannot be outsourced for the fear of technological spillovers. The maturity stage is characterized by fewer opportunities for product improvement. Therefore, the company may choose to outsource the processes to a contractor. In this stage the external contractor assumes the responsibility of the product. The ability to market the brand at a low cost product becomes a strategic differentiator. By outsourcing the product to a contractor, the company may get scale and operational flexibility by contractually relegating its inventory buildup and sharing its risk to the contractor. As the product reaches the declining stage, the focus is on the bottom line. This is achieved with low cost design, production, and distribution by leveraging supplier capabilities. Often the original Equipment model becomes the best option. (Jordan and Hugh as, 2003) gave evidence of the above argument in the case of a few MNEs where they found a close linkage between a company's product portfolio and its outsourcing decision.

2.5 *How offshoring affects the performance of MNEs, industries and countries?*

On the critical examination of offshoring and outsourcing on the USA economy, it was shown that offshoring created additional value for the economy. Every dollar outsourced created a return of 12-14 cents. Outsourcing was shown to be a win –win situation for both the source and the destination countries because by

offshoring $1.oo of the US labor, the global economy gained $1.45 to $1.47, of which, the US retained $1.12 to $1.14, while the destination country captured, on an average only 33 cents.

The performance impact of outsourcing has been researched by some researchers based on two dimensions. It has been found that internalization of non –standardized components like technology or those characterized by high product and process innovations are normally internalized (Cho1990), Williamson(1979,1985)). Murray, Kotabe, Wildt (1993) have found that the reason for internalization of these products is the result of higher financial performance .According to the internalization theory,(Buckley and casson (1976)) keeping a product in –house by internalization , a firm can maintain its competitive advantage thereby increasing the firm performance (Kotabe1990).

The impact on strategic performance was studied by (Kotabe & Murray, 1990) who argue that, internalization would not by itself necessarily imply higher strategic performance. Therefore it can be inferred that outsourcing of non-standardized products and processes are largely being outsourced.

The implication of offshoring on the innovativeness of a firm has been researched by (Kotabe, 2004) who has empirically shown that offshoring does not reduce the innovativeness of a company and it signals the company's ability to exploit comparative advantages around the country along with their corporate resources.

2.6 *GLOBAL SUPPLY CHAIN*

The global supply chain management is about managing value chain on a global basis. it determines the cost structure and capabilities of an enterprise. Globalization of markets and direct sales through the internet call for new ways of linking chains of suppliers and customers globally. The corporate unit formulates the strategy of the firm where the value –adding production and design process largely determines our options for the global supply chain strategy. The primary role of both offshoring and source plants is low-cost production, supporting efficient supply chain strategy. Globalization mandates the integration of product development, production, and distribution

The objectives of global supply chain management are usually characterized by effectiveness and efficiency, effectiveness in satisfying customers' needs and efficiency in achieving the lowest supply chain cost .Effectiveness in measuring how well the output of global supply chain operations meets customers product and service needs and requirement in terms of delivery, responsiveness, flexibility, and ability to offer a variety of products and services. The evolution of global supply chain in most industries, consists of four phases (1) achieving basic functional abilities within and integration among functional groups within

operating units,(2) achieving global enterprise-wide integration of systems and procedures;(3) optimizing global supply chain resources by identifying and exploiting constraints within the supply chain (4)building supply chain leveraging on core competencies of the supply chain. Global supply chain uses lean production mechanism which includes(1) Identifying value streams from customer's perspective,(2) identifying value streams and eliminating waste,(3) removing barriers to effective flow,(4), producing to the pull of customers demand, and (5) continuing the cycle of pursuing perfection.

Global chain optimization characterized by a level of supply chain collaboration that involves sharing of information not only for the independent planning purposes but also for collaborative synchronized planning efforts.

More importantly, achieving excellence in global supply management requires thoughtful integration of corporate strategy, marketing and supply chain strategy.

2.6.1 Elements and the theory encouraging country's participation in Global supply Chain

2.6.1.1 Port-folio diversification

The search for an alternative explanation of FDI soon revolved around the application of Markowitz and Tobin's portfolio diversification theory. This approach contends that in making investment decisions MNEs consider not only rate of returns but also the risk involved. Since the returns to be earned in different foreign markets are unlikely to be correlated, the international diversification of an MNE's investment portfolio would reduce the overall risk of the investor.

2.6.1.2 Market Size

This factor has its root in neoclassical investment theory, focuses on the role of both the absolute size of the host country's market and its growth rate. The hypothesis states that the larger the market the more efficient the investors' utilization of resources, as a resulting to potentially lowering the production cost thereby exploit ting of economics of scale. In his survey of earlier work on the determinants of FDI, (Agaewal, 1980) found the size of the host country's propensity to attract investment and empirical literature has provided further support to the market size hypothesis; (Billington,1999;Chakrabarti,2001).

2.6.1.3 The theory of Comparative advantage as the most concept in international Trade theory

The early logic that free trade could be advantageous for countries was based on the concept of absolute advantages in production. Adam Smith wrote in the Wealth of nation that if a foreign country can supply us with a commodity cheaper than we can make than we better can buy it from them with some part of the

produce of our own industry and employ in a way in which we have some advantage. The idea is simple in the sense and intuitive. If our country can produce some set of goods at a lower cost than a foreign country and if the foreign country can produce some other set of goods at a lower cost than we can produce them, then clearly it would be best for us to trade our relatively cheaper goods for their relatively cheaper goods.

2.6.1.4 Dynamic Income Redistribution and Trade

Integration of the results of income redistribution from three separate models: the immobile factor model, the specific factor (SF) model, and the Heckscher-Ohlin model demonstrate that movements of free trade will cause a redistribution of income. The immobile factor model concludes that income will be redistributed from workers in the import-competing industry to workers in the export industry. The specific factor (SF) model concludes that owners in the competing sector will gain at the expense of capital owners in the import-competing sector and that the effects on workers in both industries are ambiguous. The Heckscher-Ohlin (H-O) model demonstrates that income will be redistributed from owners of a country's scarce factor, who will lose, to owners of a country's abundant factor, who will gain. Different factors of production will likely have different degree of mobility. Some factors are easily adaptable to other industries. However, the adaptability of any productive factor is likely to change over time, with mobility rising the longer the amount of time that elapses. If a country were to suddenly liberalize trade, most of the productive factors would not adjust to the change in prices. After a few months, most adaptable factors would not adjust the change in prices. Finally, in the very long run, possibly after some years, we might expect all factors to have adapted to the changed economic conditions, either by moving to another industry or by moving out of productive activity, as with retired workers and capital equipment.

2.6.1.5 Gains from Trade with the Economics of Scale

The main reasons the why of economics of scale can generate trade gain is because the reallocation of resources can raise world productive efficiency. To see how, we present a model using Ricardian model. With the economics of scale in production, then free trade, after an appropriate reallocation of labor, can improve national welfare for both countries relative to autarky. The welfare improvement arises because concentrating production in the economics –of-scale industry in one country allows one to take advantage of the productive efficiency improvements.

Some features of the economics of scale models of trade, such as Ricardian or Heckscher-Ohlin models. Countries that are identical in every respect might nevertheless find it advantageous to trade. It is a feature of the production

process (economics of scale) makes trade gains possible. AS long as the country trade with the rest of the world, trade gains are possible. The gains from international trade are because of an improvement in productive efficiency. By reallocating resources between industries within countries, it is possible to produce more output with the resources and this remains the main motivation in support of free trade.

2.7 *Foreign Direct Investment*

In the most developing economies of the world, most offshoring and global supply chain activities are undertaken based on the four types of FDI suggested by the OLI theory. OLI theory suggest that the greater the ownership and internalization advantages possessed by the firms and the more the localization advantages of creating, acquiring from a location outside its home country, the more FDI will undertake. Where firms possess substantial ownership and Internalization advantage but location advantage will be preferred to FDI and foreign markets will be supplied through exports. On the internalization advantage firm usually do not sign a contract with subcontractor (external agent) in a foreign country because contracting is very risky because it implies transferring the specific capital outside the firm and revealing the proprietary information for instance how to use the technology or the patent. Problem could arise possibly when the agent used acquired technological know –how to compete with the mother company. Also, the agent could also damage the brands or reputation by producing substandard products.

Basically, there are four types of FDI which most of the offshoring activity by MNEs

- Resource seeking FDI
- Marketing seeking FDI
- Efficiency seeking(global offshoring/outsourcing)
- Strategic Assets/Capabilities seeking FDI

2.7.1 Resource seeking FDI

To seek and secure natural resources like minerals, raw material or lower labor cost for investment. Example, ENI constructing a gas processing plant in the Niger Delta region of Nigeria where are abundant natural gas and re-gasification for export to Italy. It is Pertinent to mention here that almost all MNEs offshoring in Africa and particularly in Nigeria are based on the Resourcing seeking FDI because there are abundant natural resources in the country.

2.7.2 Marketing seeking FDI

To identify and exploit new markets for the firms finished products. Unique possibility for some type of service for which production and distribution have to be contemporaneous (telecom, energy supply). For instance, Telecom Italia investing in Nigeria to take advantage of the huge market potential and population size of the country. Automatic TNCs have invested heavily in China because of huge market as a result of the population of over one billion.

2.7.3 Efficiency seeking FDI

To restructure its existing investments so as to achieve an efficient allocation of international economic activity of the firm. International specialization whereby firms seek to benefit from differences in product and factor prices and diversify risk. Offshoring and Global source where resource saving and improved efficiency by rationalizing the structure of their global activities. Undertaken primarily by network based MNCs with global sourcing operations.

2.7.4 Strategic asset/capabilities seeking FDI

MNEs pursue strategic operations through the purpose of existing firms or assets in order to protect ownership specific advantage in order to sustain and advance its global competitive position. This is achieved through the following ways.

- Acquisition of key established firm
- Acquisition of local capabilities like R&D.

Offshoring firms from developing countries are better-off. There is increase in the level of foreign direct investments (FDI), employment generation, productivity, wage levels, knowledge spillovers, and overall economic development. The feedback mechanism is explained by the balance of payment model. As the exported growth of the economy increases, local consumption and investment levels, generates an increased demand for imports from developed countries. This gives an opportunity for developed country multinationals to expand their revenue base. The productivity growth in both countries is enhanced lifting the global standard of living. Everyone in global economy is marginally benefited in the long run (Agarwal and Farrell, 2003).

2.8 *Regression analysis owing*

Regression analysis could be done using techniques such as the following below;

2.8.1 Empirical Method.

This research will focus on only a few major indicators of economic growth to determine their relative importance to the GDP growth. These indicators for the sake of simplicity were majorly classified under three main headings namely; outward orientation, government indicators and macroeconomic indicators.
The outward orientation is one of the key indicators of economic growth which was suggested by Neoclassical theory and the variables in this category will measure how successful a country is best at utilizing its global linkages and also how responsive other countries and markets are to its behavior . In this model, Indicators for outward orientation includes Export and Foreign direct investment which was expressed as percentage of the GDP. Exports of goods and services meaning the demand of the country's products and services abroad and strong markets for that country's goods and the demand for the country's goods in the world markets are a reflection of growth potentials and strong economic stability.
As the 1991 world development Report states, "By affecting the nature of inputs as well as production processes, trade could generate gains which its short- term benefits from improved resources allocation(98). By this fact, exports should have a positive correlation with growth.

More so, foreign direct investment (FDI) was also classified under outward orientation which shows how interested foreign companies are in that particular country's companies and markets. If the FDI is very high, obviously foreign companies will be interested investing in the country. Neoclassical theory suggested that FDI have positive effects on the GDP growth because these investments would strengthen private markets. The FDI can also make positive contribution to the host economy by supplying capital, technology and management resources that would otherwise not be available and thus boast that country's economic growth rate. With regard to capital, many Multinational enterprises (MNEs) by virtue of their large size and financial strength have access to financial resources which is not available to host country's firms. These funds may be available from internal company's source or because of their reputation, large MNEs may find it very easier to borrow money from the capital markets than the host country's firms would. Foreign management skills through FDI may also produce important benefits for the host country. Foreign managers trained in the latest management techniques can often help improve the efficiency of operations in the host country, whether those operations are acquired or through green field developments. More so, beneficial spin –off effects may arise when local personnel who are trained to occupy managerial, financial and technical posts in the subsidiary of the foreign MNEs to stimulate

local suppliers, distributors and competitors to improve their own management skills.

Another beneficial employment effect claimed by FDI is that it brings jobs to the host country which is one of the gains of offshoring activities to the host country. The effect of FDI to the host country could be either direct or indirect. The direct effects of FDI arise when a foreign MNEs employs a number of host country citizens and the indirect effects arises when jobs are created in local suppliers as a result of the investment and when jobs are created because of increased local spending by employers of the MNEs. The FDI can also have effect on the country's balance of payment accounts which is an important policy of most host government. A country's balance of payments accounts track both its payments to and its receipts from other countries. There are ways in which FDI can help a country to achieve these goals.

Firstly, if the FDI is a substitute for imports of goods and services, the effect can be to improve the current account of the host country's balance of payments. A current account deficit, or trade deficit as it is often called arises when a country is importing more goods and services than it is exporting. Governments typically prefer to see a current account surplus than a deficit.

A second potential benefit is when MNE uses a foreign subsidiary to export goods and services to other countries. According to the UN report, inward FDI by foreign multinationals has been a major driver of export-led economic growth in a number of developing and developed nations over the last decade.

2.8.2 Analytical Methods/Models

Statistical analysis can be looked at by using different statistical models. Choosing the appropriate model for particular data, particular expectation is of great important mostly due to the nature of data. The variables for the research have to be taken into account for a particular model; which can either be a linear or non-linear. Considering some models and its effects on data processing, one can justify why choosing particular model. For example, Estimating Framework models, Ordinary least square models (OLS), Regrssion model, could all used for data analysis depending on the aims and objective of the analysis. The analysis can be treated as either deterministic or stochastic model base on your expectation and data.

This type of mathematical model has outcomes that are precisely determined through known relationship among states and events without any room for random variation. In this model, a given input will always produce the same output and cannot be used because it is more of chemical equation than linear regression.

Stochastic means being or having a random variable. A stochastic model is a tool for estimating probability distributions of potential outcomes by allowing for

random variation in one or more inputs over time. The random variation is usually based on fluctuations observed in historical data for a selected period using standard time-series techniques. Distributions of potential outcomes are derived from a large number of simulations (stochastic projections) which reflect the random variation in the input(s).This model does not give the exact result. It gives ranges of value of distribution that is reasonable. The most likely estimate is given by distribution curve or property density function and it is usually a symmetrical distribution of typically peak mode curve.

2.8.3 Estimating Framework model

Since the study of this work involves different time period and various countries, we will present cross sectional regression data. To obtain estimators that are valid, it requires that one should pool all observations for the three countries namely India, Switzerland and Nigeria. In econometric analysis, pooling assumes that the regressions parameters do not change over time and that they do not differentiate between various cross sectional units Gujarati (1995), Pindyck and Rubinfield (1991), conclude that pooling cross-sectional and time series data, create new problems for the regression analysis. Pool cross section and time series models can be estimated with the covariance model The estimation procedure involves two steps, the first step is to estimate the equation on ordinary least squares (OLS) regression on the various independent variable and the constant. The use of pool data usually raises problems associated with the properties of time series. For this purpose of this work, this method was not used for the analysis.

2.8.4 Ordinary Least Square model.

In statistics, ordinary least square (OLS) or linear least square is a method for estimating the unknown estimators in linear regression model. This method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation. The OLS estimators is consistent when the repressors are exogenous and there is no multicolinearity and optimal in the class of linear unbiased estimators when the errors are homoscedastic and serially uncorrelated. OLS provides minimum variance. OLS is used in economics (econometrics) among many areas of application.

2.8.5 Regression model.

The empirical analysis of this work is based on the regression model to link annual country's GDP growth rate and the various independent variables and the estimated error.

The main reason for choosing this model is based on its success in empirical applications which several authors have also provided an economic theoretical backing(Bergstrand,1985,Deardorff 1998).The model uses extra time series observations resulting to more accurate estimates.

The Regression model links the contemporaneous value of GDP to explain trade flows. In this model, when only one dependent variable is being modeled, a scatter plot will suggest the form and strength of the relationship between the dependent variable and the repressors. It might also reveal outliers .The model can also be used as a multiple linear model since it has six independent variables, constant and a disturbance commonly called errors. This model can be used to assess whether the spillovers of offshoring such as Export, FDI, Investment, Spend, Inflation and Debt are consistent with the predictions of economic theory that are among the growth determinants. The equation relates the bilateral offshoring activities of a developed nation with a developing nation and it is augmented to capture other exigencies like the noise.

The regression model is used to examine the possible determinants for the country's annual economic growth and the formula is depicted below

$$GDPGR_{it}= b_o+b_1*EXP+b_2*FDI+b_3*SPEND+b_4*INVEST+b_5*INFL+b_6*DEBT+e_{it}$$

The equation above is a linear regression because it models the relationship between the dependent variable and the explanatory variable which in the above equation is a sample of multiple regressions. A linear regression model assumes that the relationship between the dependent variable(GDPGR) and p-vector of regresses, Export, Foreign direct Investment, Spending, Investment, Inflation and Debt with the so called disturbance term, error, ϵ which is an unobserved at random.

The regression model equation above could be written in form below depicting matrix notation.

Considering a time expand of 20 years, of GDPGR for each country, with the various factors that have effect on the GDPGR. We will have 20 stochastic models for each country. Comparing it with seven estimators will give a mean the individual estimators. This is a good statistical practice as having the number of estimators much less than the observation equations. The coefficients of the independent variables are determined by normalizing the regression model in matrix notation.

CHAPTER 3: GLOBAL SUPPLY CHAIN IN AFRICA

3.1 *Main issues and risk affecting global supply chain in Africa*

Supply chains today in Africa are becoming increasingly global and complex, creating risk at every level of product development, manufacturing, and distribution .Global operations, while helping to achieve cost savings and market penetration, undoubtedly are accompanied by risk. The democratization in Africa has been rising since the end of 2001, all African countries except five have held multi-party elections(Barkan,3).However, due to stalled and incomplete democratic processes where authoritarians retains effective control, Africa remains the least democratic region, excepting the Middle East. Supply chain in Africa is characterized by the following supply chain risk drivers namely,

(1) Trade risk (2) Political risk (3) Geophysical risk (4) Economic indicator risk (5) Operational risk.

3.1.1 Trade risk

This center has the core function of regulatory compliance, specifically dealing with the export and import of goods. Trade risk factors includes customs valuation, transshipment, government agency controls(consumer safety and trade regulations), anti-dumping and countervailing duties, requirements of free trade agreements, special trade provisions and export licensing and controls, and changes to the harmonized traffic schedule(Siciliano et al, 14),the cost of compliance is two-fold: typical duties and punitive fines.

Government enforcement of customs duties and the scrutiny and potential penalties have been noted as an area of concern for executives

3.1.2 Security

Over 90 percent of world trade is accounted by overseas shipping which translates to a high value of goods that are subject to risk while in-transit (Sarathy28).Companies face the risk of cargo security while shipping raw materials, work in progress, and finished good, terrorism, theft, and transfer of parasites and disease, are all concerns that increase with outsourcing of manufacturing goods in development markets. Having inventory transported internationally which is subjective to increased risk will also be reflected in higher Insurance premiums (sarathy31).

3.1.3 Legislation

To ensure security of imports and exports, countries enact legislation to govern the movement of goods through maritime and air shipping. While legislation in

itself is not a direct supply chain risk, it has a profound effect on the speed and ease with which materials can pass between facilities in different countries.

The developing countries like Africa have their own version of risk like bribery from officials, and erratic enforcement which create financial costs

3.1.4 Political Risk

Political risk including instability, religious tensions, bureaucracy, crime, corruption, and inter-state conflict are affecting offshoring and Supply chain in Africa

3.1.5 Social Elements

Political risk including instability, religious tensions, bureaucracy, crime, corruption, and inter-state conflict are affecting offshoring and Supply chain in Africa

3.1.6 Economic Diversification

Most of the African countries relied on a limited number of key sectors for economic prosperity; companies are at risk if that resources or sector experiences a down turn.

3.1.7 Crime and corruption

Corruption occurs at every level of government and this particularly affects businesses operation in most developing economies of the world.
A recent poll conducted by America companies operating in Africa found that the average company lost 8.2 million dollars over a three year time span due to illegal bribes and kickbacks.

3.1.8 Economic Indicator Risk

Gross Domestic product is a good measure of monetary value of all the finished goods and services produced within a country's borders in a specific time period. If complete, snapshot of the state of the economy.GDP is a critical component and very important component to supply chain operations and it is a factor by firms for offshoring especially in undiversified economies like Africa.

3.1.9 Inflation

Inflationary pricing adversely affect global supply chain of the developing economies resulting to higher prices in transportation which affects everything and compound the eroded financial operations in the emerging markets.

3.1.10 Impacts of Supply Chain Disruption.

Supply chain risk can result in low efficiency and effectiveness and this seems to be the most challenging problems confronting supply chain in Africa.

3.2 *An overview of Nigeria*

Nigeria is geographically situated in West Africa. It has borders with the gulf of Guinea and lies between Benin and Cameroon. It also bordered by Chad and Niger. It has an area of 923768km^2 with coastline of 853km. The country has a population of about 152,000000 (2010).It has 3 major tribes and languages, English, Hausa, Ibo, Fulani and Yoruba.

Nigeria has three dominant religions mainly Christianity, Islamic and African traditional religion and Nigeria's political administration has been under series of military government which had truncated civilian rule until1999 when there was institution of nascent civilian administration.

3.2.1 Economy

Nigeria's economic growth has for many years been hampered by political instability, corruption, inadequate infrastructural and poor macroeconomic management. In 2008, however, the government began pursuing economic reforms, such as modernizing the banking system, curbing inflation, and resolving regional dispute over the distribution of earnings from oil industry and with the numerous economic reform agenda planned towards Nigeria becoming one of the biggest economics in the world by 2020 and in this regard unveiled a power sector blue print that includes privatization of the state –run electricity generation and distribution facilities in 2010.

Nigeria's estimated federal budget for 2010 fiscal year was $377.9 billion with agriculture 30%, industry 32% and service sector 38%.
Nigeria's natural resources include oil and natural gas, tin, columbite, bitumen, coal, limestone, lead and zinc with abundant agricultural resources.
Nigeria had export income of $82.54 billion in 2010, with petroleum products for 95% and she spent an estimated $44.1 billion in 2010 on imports which principally consists of machinery, chemicals, transport equipment, manufactured goods.
Nigeria exports partners are chiefly US having (37.4%), India 10.5%, Switzerland7.81% and Spain 6.9% and other countries having some percentages.

Nigeria import partners are China, Switzerland, Netherland, USA, France, UK and Italy.

3.2.2 Industry and Investment

Nigeria is a country rich in natural resources; consequently most industrial activities revolves around crude oil and gas exploration and oil is the country's natural resources generating about 95% of the country' revenue. Nigeria has proven gas reserves estimated at 187 and undiscovered potential of about 600 tcf respectively. The country is a member of OPEC and the continued increase means continue growth in this sector. Nigeria offers the interested investor in Africa's largest domestic market as well as the additional attractions of a low cost labor and abundant natural and human resources.

There is a growing Nigeria consensus that FDI is essential to realizing Nigeria's vast potential and foreign investors will only be attracted if the government is able to sustain democratic principles, enhance security of life and property, rebuild and maintain infrastructure.

3.2.3 Trade

Nigeria has been a member of the world trade organization (WTO) since 1st January 1995.She is also a member of the Economic Community of West African states (ECOWAS). Additionally, Nigeria has signed various trade agreements, most recently with Kuwait and it has an Economic partnership Agreement with (EPA) with the European Union.

Nigeria's main imports include machinery, chemicals, transportation, and equipment as well the manufactured goods. There are currently 24 trade zones of which 15 are operational. Nigeria has trade partnership with China forming about 16,500 hectare free trade zones near Lagos which is expected to be boon for potential and prospective investors.

3.2.4 Nigeria –IMF Monetary Relations

On the international development, Nigeria joined the IMF after her independence in order to participate and benefit from the purposes of the fund. In their- relationship, the IMF focuses mainly on Nigeria's macroeconomic policies. These are policies that have to do with public sector budgets, management of interest rates, money and credit and exchange rate, and financial sector policies , particularly the regulation of banks and other financial institutions as agreed by the BIS -Bassels agreement. The funds also pays attention to structural policies that affect macroeconomic performance in Nigeria like (structural Adjustment program me (SAP) which the fund advised Nigeria to undertake because by 1985, the economy was under total management of the fund. The Fund worked with Nigeria under three categories. One of such program me is the policy support

instrument(PSI) which enables the IMF to support Low- income countries that do not want or need IMF financial assistance.

3.3 *Africa Countries Analysis of the Supply Chain*

The brief review of the global supply management in Africa, we decided to focus on these countries namely Botswana, Tanzania, South Africa and Nigeria for the case study.

3.3.1 Botswana

The country is considered the least corrupt country in Africa and ranked as one of the top 10 economic policy reformers across the globe. Supply chain reform in business, protecting investors, and trading across border were noted by the World Bank to be effective. Out of 181 countries, Botswana had the 10th lowest tar rate of 17.1 percent. Undiversified economy, high population growth and shortage of technical and managerial skills with the unemployment rate are just under 20%. The government is attempting to privatize many sectors but facing resistance from organized labor group that would no longer be guaranteed the jobs in a more privatized economy, compounding the unemployment. Botswana is experiencing a sensitive labor environment.

3.3.2 Tanzania

The study on international supply chain practices in developing countries like Tanzania faces a lot of challenges with particular references to the public transport sector, for example the use of outdated technology in the domestic market, lack of trust, documentation problems, and lack of integrated computerized system to link with overseas suppliers, and so on.

Tanzania is one of the fastest growing economies in Africa after years of economic structural adjustments program me. Since the mid -1980s, Tanzania has implemented far reaching reforms in the political system, economic management, and governmental administration. The economic reform program me that commenced in 1986 have changed the command-based economy (central planned economy) into a market one. Trade, exchange rates, and interest rates are now fully liberalized. The reform of government- owned companies has been privatizes/divested about half of the more than 4001 government- owned companies (Tanzania, 2007). The Gross Domestic Product (GDP) in real terms grew by 7.1 percent in 2007 compared to 6.7 percent in 2006. The increase in agriculture, construction, and services contributed to the growth (Tanzania 2009).Most developing countries like Tanzania benefit in

engaging in International supply chain by purchasing goods/services internationally in order to meet requirements at low cost. International supply chain experiences in public transport sector in Tanzania. Figure below show the international supply chain network from international suppliers to customers in Tanzanian public transport sector.

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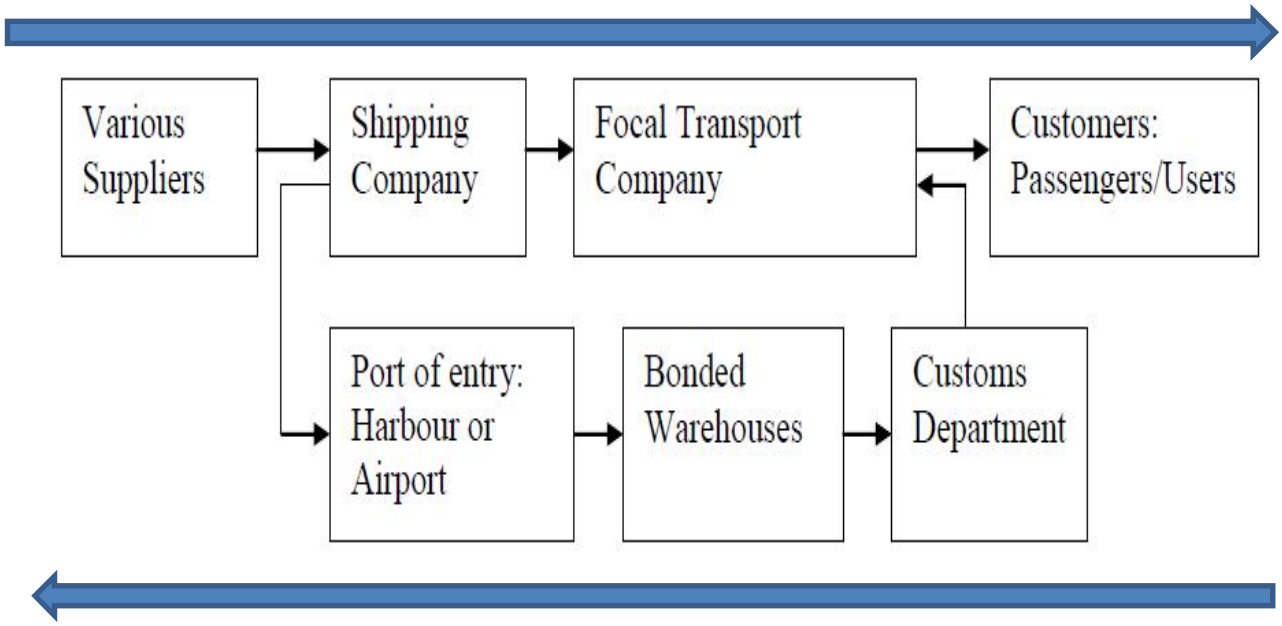
Supply of goods and services



In order for the international supply chain to work efficiently and effectively, and adding value, there is a need for management to alleviate some of the purchasing and supply chain problems and the government can improve the transport network in the country.

The key international supply chain problems are as follows,1) The use of outdated technology in the domestic market.(2) Lack of trust. (3) Documentation (4) Lack of integrated computerized system to link with suppliers. (5) Original manufacturers of parts no longer exist(6) Quality assurance determines the nature of supply chain (7) Manufacturers/Suppliers don't accept small orders (8) Price increases before opening a letter of credit in favor of the supplier(9). Lack of reliable internet services, especially speed. (10) Currency requirement for making payments. (11). Suppliers sometimes select expensive method of transport. (12).Culture of suppliers imposed on local operations. (13). Overseas suppliers requires specifications and drawing of products which are expensive. (14).Difficulty to obtain information on the reliability of the overseas suppliers. (15).Purchasing function sometimes is not involved in making purchasing decisions.

The responses in this study indicate that there are many international supply chain management problems, from the overseas suppliers to the focal transport companies in the domestic market listed above to the personnel involved in the international supply chain activities need training in international supply chain management in order to manage effectively and efficiently the supply chain, and to minimize the operational costs.

In order to improve the economic growth there is need to upgrade the transport network. Using an effective and efficient transport system, Tanzania can achieve expected national development which can add value to the end of the international supply chain in the domestic market. The government should continue to engage the private sector in the development of the transport infrastructure in order to increase the productivity. There is a need to create a more competitive business environment in Tanzania. Regarding the commercial relationship with overseas suppliers, transport companies in Tanzania should negotiate in advance the contractual business terms. There is a need for both overseas suppliers and customers to clearly understand the cultural differences in conducting business in order to improve service level and productivity. Suppliers and customers can benefit in the international supply chain by collaboration. Companies in the developing countries need to integrate their operations, especially the sourcing processes into the international supply chain, and collaboration to achieve high service level at a minimal cost.

I , therefore challenge the stake holders to develop an in depth supply chain studies that shall comprises both the public and private sectors in order to determine the level of international supply chain practices and performance in the transport sector, using a large sample reflecting other sectors of the economy where supply chain management plays a major role.

3.3.3 Supply Chain Planning in South Africa

For about two decades now, the South African Public sector has undergone transformation through the introduction of procurement reforms. The procurement reforms started in 1995 and were focused on two areas, namely the promotion of principles of good governance and the introduction of a preference system to address socio-economic objectives.

A contingency framework for understanding supply chain implementation is depicted below. The diagrammatic shows the driving forces that affects supply chain with the benefits coupled with the barriers confronting supply chain implementation in South Africa.

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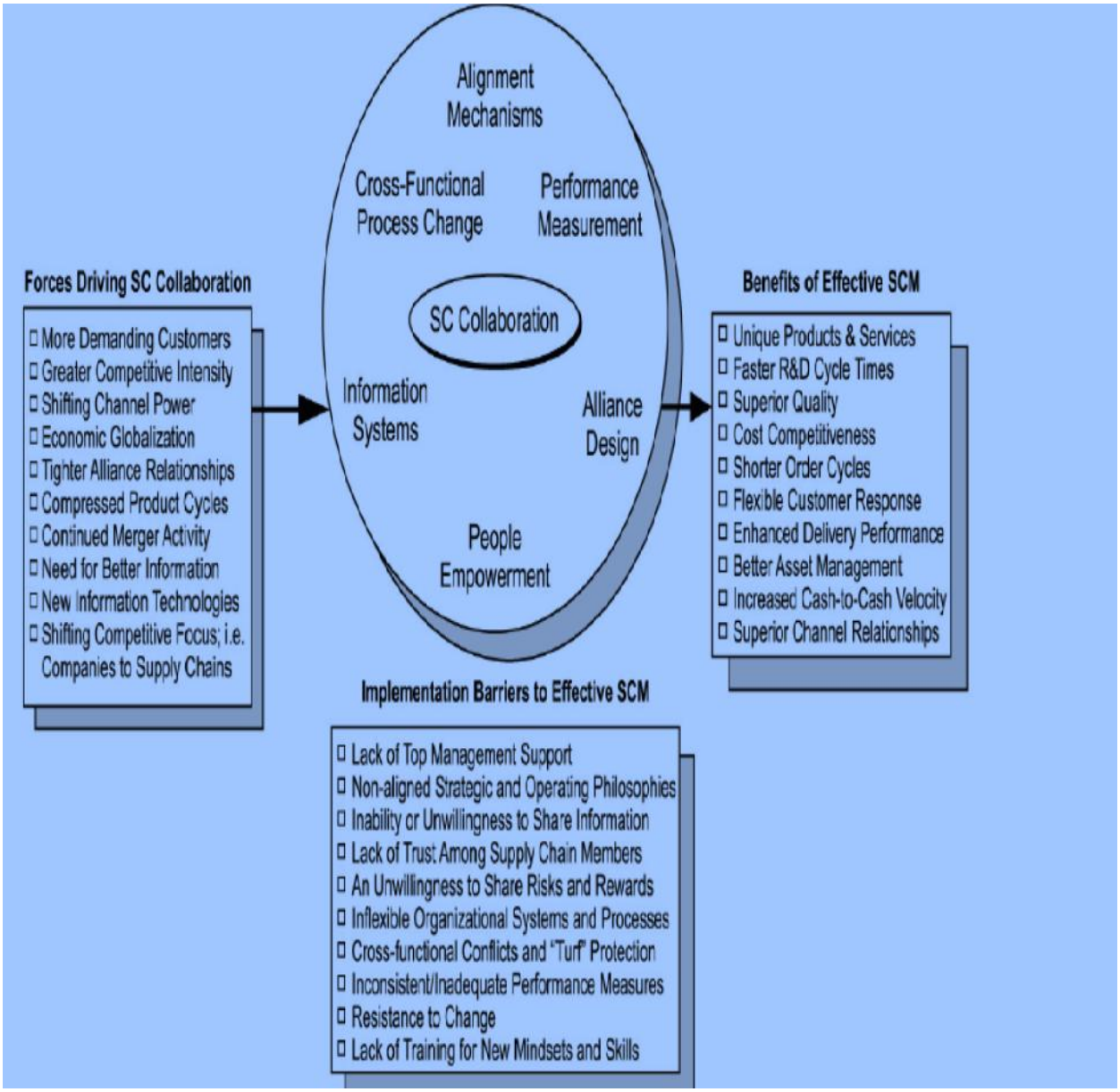

To introduce and implement the reforms, the SCM unit at the national treasury in 2001 completed a joint country procurement assessment review (CPAR) with the World Bank to assess procurement practices throughout the public sector. The procurement reform processes were embedded in section 76(4) of the public finance management Act (PFMA) and the preferential Procurement Policy Framework Act(ActNo5 of 2000)(PPPFA)(SAMDI,2005).The CPAR identified certain deficiencies in practices relating to governance, interpretation and implementation of PPPFA and its associated regulations. The deficiencies made the provincial treasuries, in conjunction with the national treasury, to vigorously embark on a reform initiative to introduce best procurement practices that are efficient and effective. Based on this, SCM was introduce in South African public sector(MKhize,2004).The framework emphasized the application of the SCM

requirements which cover demand management, acquisition management, logistics management, disposal management, risk management and performance management.

The implementation of the SCM occupies center stage in the financial management reform process in the public sector in South Africa and the government has adopted integrates SCM in its public procurement policy. The Integrated SCM aims to add value at each stage of the process from demand of goods or services to their acquisition, managing the logistics process and finally to their disposal.

3.3.4 Nigeria global supply chain

Nigeria has vast natural and human resources, strategic coastal location and large internal market for it to become the economic power house for Africa. Unfortunately, this potential has not been fully exploited.

3.3.4.1 Nigeria and the Drivers for services offshoring Growth.

Companies engage in offshoring and global supply chain in Nigeria for a variety of reasons. The most important factor is the reduction of labor cost. Since salaries comprise a significant part of variable costs, offshoring business can provide some reasonable cost for the firms in the developed countries. In addition to cutting costs, firms use offshoring to increase their productivity and competitiveness.

There are factors which determine whether a particular region would be an attractive offshoring operation. The offshore location Attractiveness index and it consists three major categories (1) Financial structure (2) People skills and availability and (3) Business environment. The table below shows the details of the key elements. Financial structure has 40% of the total weight cost advantage as the primary driver while people skills and business environment has 30% of the remaining weight.

Factors explaining the attractiveness of the offshoring operations

Category	Sub Category	Key factors
Financial structure 40%	Compensation cost	Average wages and median compensation costs for relevant position
	Infrastructure cost	Electricity and telecommunication cost
	Real Estate cost	Office rents per square meter
	Regulatory cost	Corporate tax rate and quantification of other regulatory cost
People Skills and Availability 30%	Work force availability	Population and total work force
	Labor force quality	Literacy rates and English speaking ability. Proportion of population pursuing tertiary education. Education expenditures as a %of GDP Availability of information skills.
	Reputation	Existing IT and BPO market size Quality rankings
Business Environment 30%	Infrastructure	Connectivity, Availability of communication, Electricity , transportation
	Regulatory policies	Security of intellectual property and piracy rates. Barriers to doing business
	Economic stability	Fluctuation of exchange rates
	Political stability	Corruption and governance

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There are several key factors that determine whether Nigeria is attractive to offshoring activities which were depicted on the table above. Nigeria has a mix of both strength and weakness of these indicators

Financial structure is the key determinant of an offshoring location attractiveness and Nigeria off reliable services at a low cost will be more competitive than those countries with higher costs and Labor cost in Nigeria is relatively cheap, making Nigeria attractive in terms of average monthly and annual labor costs. Nigeria is relatively poor making the country unattractive in terms of processing cheap and reliable infrastructure. Developing a reliable source of energy is a key challenge. The high cost and epileptic supply of electricity often deters investors. The Nigeria transportation system will remain an area of weakness in the country's business environment unless resources are devoted towards improving the road network, especially in the major urban areas. Beyond cost, the quality and availability of labor is an important factor in determining the attractiveness of a country for offshoring activities: English is

widely spoken in Nigeria and this can provide the country with a competitive edge. In terms of adult literacy, Nigeria ranks a head of many countries competing for a share for a share of the offshore services market, with literacy at 57 percent and female at 60 percent of Nigerians needs to expand its tertiary education and offer more technical and scientific subjects. Nigeria lags other offshoring destinations in tertiary education enrollment, a trend that could hamper its ability to grow in offshore sector. It should also pay closer attention to educational outcomes to become a truly competitive in global economy. The quality and availability of technical and vocational training, particularly in information technology, must be improved. Nigeria has very specialized technology, IT, and management colleges, and the effectiveness of existing schools is typically hampered by financing and human capacity constraints.

Contract enforcement is an area where Nigeria has become stronger and yet further progress can be made .A contract still takes more than a year to be enforced and costs 27 percent claim in Nigeria, but less costly than in many of Nigeria's competitors. Flexible labor regulations present a significant advantage for Nigeria. Unlike many other developing countries, Nigeria's labor system is straightforward and not overly complex, allowing firms to employ the most efficient number of workers while also providing adequate protection to workers.

The lack of adequate electronic communication and e-transaction legislation has hampered growth in the Nigeria offshoring sector and has kept investors away .Information technology industries in developed economies are extremely protective of intellectual property and want to operate in countries that have a tradition of protecting and respecting intellectual property rights. However, the fact that Asian countries are still struggling with this means that Nigeria has some space to develop its own intellectual property protection regime. Nigeria has a long experience with export processing zones (EPZs), and similar zones such as offshoring parks can play a facilitating role in the industry's growth through the advances in ICT which will attract other businesses in setting up outsourcing business functions to Nigeria offshoring firms.

Nigeria's reputation in the international arena remains poor, with the Niger Delta crisis, kidnappings and country's reputations for scam being the predominant news stories from Nigeria. These issues are seriously address by the anti-corruption agency (EFCC) arresting and prosecuting criminals in order to rebrand the country's image and reputation. Nigeria should focus on the lower end Business process outsourcing of the value chain before it can venture into the higher value added business services, it should explore the following areas in order to become competitive in offshoring.

Nigeria can begin by developing its domestic outsourcing industry, creating call centers for domestic companies and government services as a first step to offshoring which can compete effectively for back office jobs. Such as accounting and data management, however back office processes add less value and Nigeria should eventually try to move into high value added services. Nigeria's main strengths as a potential offshoring destination lie in its relatively low wage and cost structure. The country's large size and the youthful population are also assets for companies wishing to establish large –scale call centers and similar operations. The country's good record on contract enforcement and flexible labor market regulations all increase its competitiveness.

CHAPTER 4 METHODOLOGY

4.1 *Introduction*

The level of economic growth for a country represents many aspects of life in that country. These aspects range from the strength or weaknesses of macroeconomic policy to the quality of life for the average citizen. Stable levels of macroeconomic growth are associated with every productive economics, higher GDP per capita and higher standard of living. However, low levels of economic growth are linked to low levels of productivity, poor living conditions and stagnant markets. For the exporter, the GDP determines economic capacity while the per capita GDP determines the production for export supply. Also for the importer, a similar argument holds. Again, the higher the GDP the higher the potential demand for foreign goods while a higher per capita GDP or population would suggest greater self- sufficiency and less demand for foreign goods.

Many countries have experienced substantial economic growth over the past century (Mankiw, 80). However, Nigeria has been facing unprecedented macroeconomic challenges, general political turmoil, and economic mismanagement thereby making the country unsusceptible to global investors in spite of its enormous human and natural endowment.

4.2 *Regression model.*

The empirical analysis of this work is based on the of regression model to link annual country's GDP growth rate and the various independent variables and the estimated error.

The main reason for choosing this model is based on its success in empirical applications which several authors have also provided an economic theoretical backing(Bergstrand,1985,Deardorff 1998).The model uses extra time series observations resulting to more accurate estimates.

Regression model links the contemporaneous value of GDP to explain trade flows. In this model, when only one dependent variable is being modeled, a scatter plot will suggest the form and strength of the relationship between the dependent variable and the repressors. It might also reveal outliers .The model can also be used as a multiple linear model since it has six independent variables, constant and a disturbance commonly called errors. This model can be used to assess whether the spillovers of offshoring such as Export, FDI, Investment, Spend, Inflation and Debt are consistent with the predictions of economic theory that are among the growth determinants. The equation relates the bilateral offshoring activities of a developed nation with a developing nation and it is augmented to capture other exigencies like the noise.

The regression model is used to examine the possible determinants for the country's annual economic growth and the formula is depicted below

$GDPGR_{it} = b_o + b_1 * EXP + b_2 * FDI + b_3 * SPEND + b_4 * INVEST + b_5 * INFL + b_6 * DEBT + e_{it}$

The equation above is a linear regression because it models the relationship between the dependent variable and the explanatory variable which in the above equation is a sample of multiple regressions. A linear regression model assumes that the relationship between the dependent variable(GDPGR) and p-vector of regresses, Export, Foreign direct Investment, Spending, Investment, Inflation and Debt with the so called disturbance term, error, ϵ which is an unobserved at random.

The regression model equation above could be written in form below depicting matrix notation.
Considering a time expand of 20 years, of GDPGR for each country, with the various factors that have effect on the GDPGR. We will have 20 stochastic models for each country. Comparing it with seven estimators will give a mean the individual estimators. This is a good statistical practice as having the number of estimator much less than the observation equations. The coefficients of the independent variables are determined by normalizing the regression model in matrix notation.

The Mat Lab software was used for the matrix calculation of about 20 by 7 dimension. It is very helpful as the truncating of numbers have effect on the result was curbed. Hence the longest decimal point was considered to give a smooth approximation of the estimators.

4.3 *DESCRIPTIONOF VARIABLES USED*

A short description of the dependent and independent variables used in the analysis is depicted below.

Tabella 1 ***Description of variables used and the expected sign to the independent variables***

Category	Variable	Definition	Expected
Dependent	Annual Growth rate of GDP	GDP growth (Annual %)	N/A
Outward Orientation	EXP	Export of goods and services(% of GDP)	+
Outward Orientation	FDI	Foreign Direct Investment(%of GDP)	+
Government Indicators	SPENDING INVESTMENT	Expenditure, Total(% of GDP) Gross Domestic Investment(% of GDP)	+ +
Macroeconomic Indicators	INFLATION DEBT	Inflation GDP Deflator (Annual %) Central government debt total(% of GDP)	- -

Tabella 2 depicting the estimators for the 3 countries

Estimators	SWITZERLAND	INDIA	NIGERIA
bo	2.398320596203364	7.360091763202945	3.598218161392026
b1	0.100960326450832	-0.228096331 818568	0.233656508228976
b2	0.078938698858522	-1.268851838286963	-0.735957470867991
b3	-0.292998344726759	-0.076678696170973	-0.090647819845222
b4	0.581778783991797	0.531757607434173	-0.030112682405275
b5	-0.569426307141214	-0.293814812911144	-0.048948273957233
b6	0.113996720154572	-0.061442502292781	0.006473885263144

In the table above, the multiplication factor of each of the variable, their respective signs determines its effect on the GDP. Although , they all have an expected sign but could not be realized in real times for the 20 years span due to global economic and local economic contingencies as well as exogenous factors such as wars, natural disasters etc.

Comparing with the expected sign on table 2.Export of the two countries have a positive sign with the exception of India which has a negative sign. The expected sign of FDI of the countries is positive but Switzerland has a value with small magnitude. Spending has the expected sign of positive while all the countries have negative sign with Switzerland having the highest and the reason could be attributed to the huge financial aids to the developing countries. Inflation had the expected sign of negative with India conforming and Switzerland and Nigeria having positive. The possible reasons for not in conformance with the above anticipated sign could be as result of both endogenous and exogenous factors which I explained earlier.

To get the residual or the dummy variables the estimated GDPGR is deducted from the observed GDPGR. To get the estimated GDPGR for each country the various estimators were applied to the individual parameters, to determine the matrix Aβ. Table 3 has below the individual residuals for each country.

Tabella 3 *Variables statistics for India*

Variables	Means	SD	Correlation						
			Constant	EXP	FDI	SPEND	INVS	INFL	DEBT
Constant	7.3601	1.239	1.53437						
EXP	3.2858	0.0032	0.00074	0.00001					
FDI	1.33666	0.0134	0.01225	-0.0001	0.00018				
SPEND	5.68884	0.0122	-0.0151	.000007	-.00012	0.00015			
INVS	14.8106	0.01095	-0.0134	.000013	-.00010	.000132	0.00012		
INFL	2.05954	0.00186	-001012	.000002	-.000001	.0000097	.0000075	0.00000347	
DEBT	3.04206	.00089	-0.0011	-.00000004	-.0000085	.0000104	.00000915	.000000914	0.0000008

Tabella 4 *Variables statistics for Switzerland*

Variables	Means	SD	Correlation						
			Constant	EXP	FDI	SPEND	INVS	INFL	DEBT
Constant	2.3983	1.701	2.89216						
EXP	4.20413	0.0803	-.025991	.006449					
FDI	.252875	0.1662	.03914	-.008243	.027639				
SPEND	19.7819	0.156	.0056306	-.008854	.007834	.024375			
INVS	12.4389	0.4316	-.114634	.019608	-.015269	-.064557	.18626		
INFL	.651963	0.504	.129496	-.018545	.0106568	.056448	-.17185	.253813	
DEBT	2.25223	0.0555	.005438	-.000699	.0000023	.000234	-.00325	.007660	.0030776

Tabella 5 *Variables statistics for Nigeria*

Variables	Means	SD	Correlation						
			Constant	EXP	FDI	SPEND	INVS	INFL	DEBT
Constant	3.5982	6.879	47.32033						
EXP	7.6957	0.0879	-0.12821	.0077289					
FDI	2.7747	0.3009	-.1217545	-.0001351	.090552				
SPEND	3.9635	0.1018	-.4218491	-.00136045	-.0108334	.010367			
INVS	1.19046	0.0959	-.3677517	.000765365	.00624333	.0026179	.009193		
INFL	1.11509	0.02057	.06107158	-.00054188	.000031567	-.0006803	-.000681	.000423	
DEBT	.262925	0.1182	-.240792	-.00380840	.000305506	-.0005364	-.003719	.0002117	.013973

CHAPTER 5: ANALYSIS AND CONCLUSION

5.1 *INTRODUCTION*

This research has looked at the inter-trade chain of Nigeria and other African countries but the bulk of this work has been based on comparing Nigeria with a developing country and developed country like India and Switzerland respectively. With the offshoring and global supply chain, a number of factors were looked at and all these countries were placed on the same paste and level for comparison for a period of 20 years. The percentage of GDPGR for each year and some influencing factors were modeled analytically to predict the past, present and possible future situation of these three countries. Each of these countries has what their economy is based on.

The back bone of the economy of India is information Technology which is its major offshoring activity. Switzerland has chemicals and pharmaceutical products whereas Nigeria has oil and gas which host its major foreign direct investment. The criticality of these situations is that common factors of offshoring and global supply chain are needful in manufacturing and servicing sectors. Companies see it very essential to delocalize some part of the company's value chain in order to have a mix of access to skilled labor, costs, and a focus on core competence, with greater weight placed on access to skilled labor than for offshoring of other activity. Generally speaking, costs are of greatest significance for unaffiliated offshoring and least for domestic outsourcing. Companies usually offshore goods and services when trade laws are not favorable for export.

In all these, the research was channeled to see how it affects GDPGR by looking at a number of independent variables that influence GDPGR. In the detailed analysis, we saw the positive influence of factors like Export, Foreign direct investment as well as investment. The multiplying factors of the above variables shows predominantly positive as compared to the other three factors; spend inflation and debt. By the graphical representation tabular and table methods for each of the variables which was compared with each other in the three countries. There was a trend for each country depicting a scenario pertaining to each variable for each country. Although there was some drastic changes for some periods with some variables which resulted to different trend of the country's GDPGR.

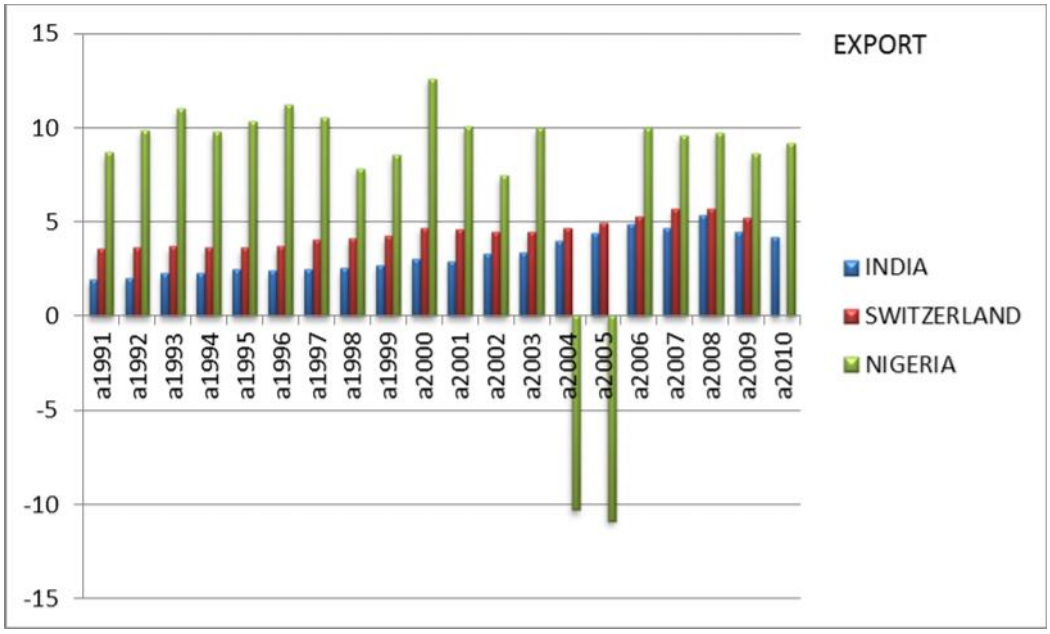

Figura 1 Graph of data analysis of export

The analysis from the bar chat shows that Nigeria has a negative output gap in the period 2004 and 2005 fiscal year when compared with the other two countries because of some bottleneck experienced because of some insurgency in the Niger Delta which obviously affected the export of crude oil which is the country's mainstream export. Consequently, her economic transactions with the rest of the world suffered a major setback and the problem was later addressed and its export improved.

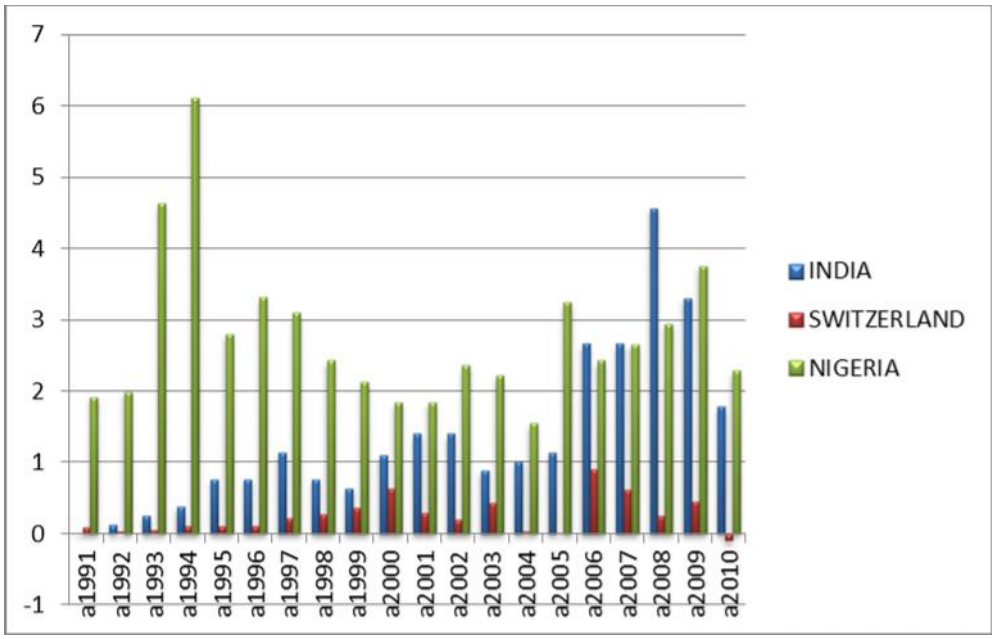

Figura 2 Graph of data analysis of FDI

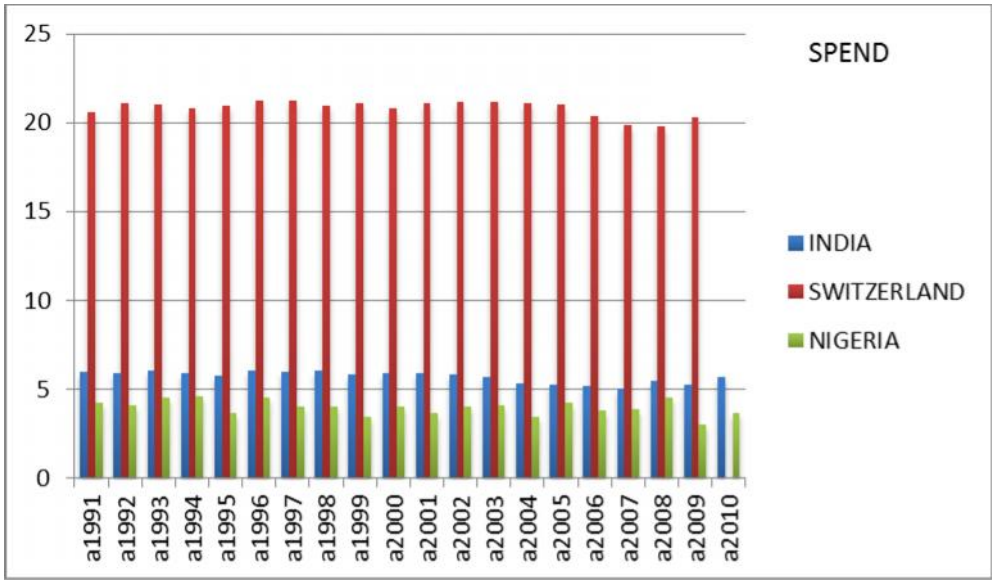

Figura 3 Graph of data analysis of Spend

The analysis also shows that the two countries, Nigeria and India recorded low spending except Switzerland because as a developed nation, it spends much because they give financial needs to the developing nations and also spend

more in infrastructure and high consumption with other miscellaneous spending than developing country like Nigeria.

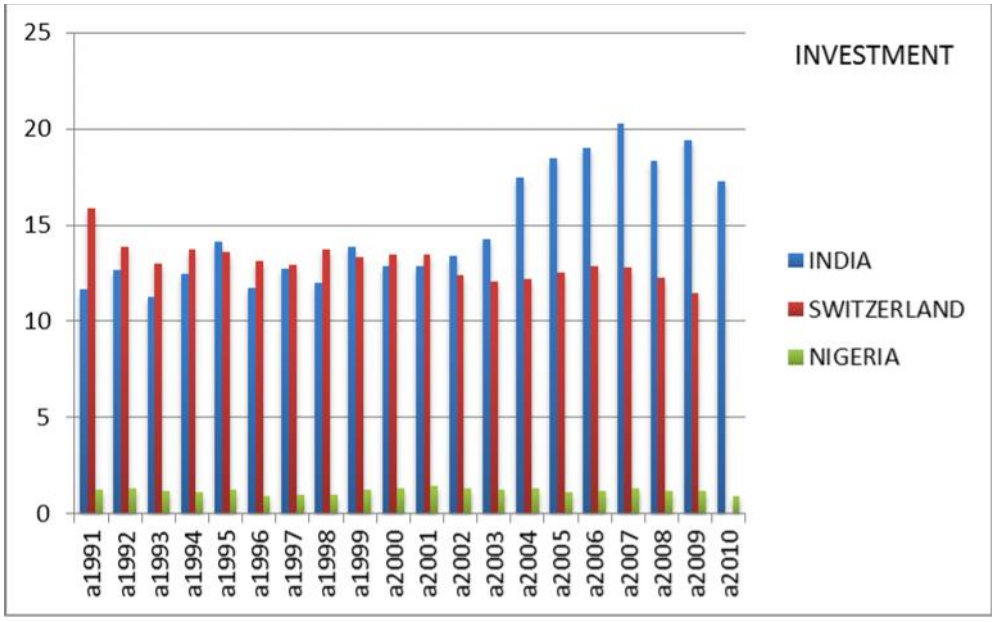

Figura 4 Graph of data analysis of Investment

The analysis shows that developing countries like Nigeria has low level of investment because of the negligence by the government to invest massively in human and infrastructural development. Also, corruption among the political class who stole wealth of the country to invest abroad has made investment in the country worse. Although, this ugly thread is being addressed with the anti-graft agency.

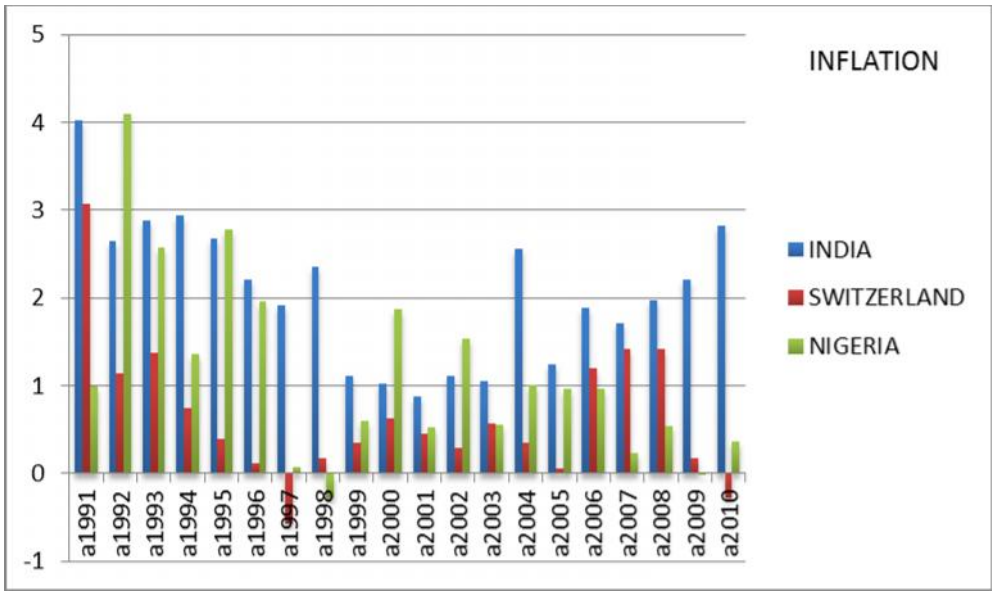

Figura 5 Graph of data analysis of Inflation

The analysis carried out shows that Switzerland has a negative sign on their inflation. Its implication is that the macroeconomic policy of the country is good. The other two developing countries show that the macroeconomics is not good as they have high inflation rate. The inflation with negative sign shows a price deflation meaning that the general price level is falling and the value of money is increasing. Although, the possible cause could be attributed to some economic growth and a high level of spare capacity in many industries that is driving prices lower. Nigeria and India have high inflation and the possible causes could be domestic and external. The domestic cause may be cause by a rise in government VAT on some utility companies providing basic amenities that can effect inflation.

On the external source could come from the unexpected rise in the price of crude oil or other imported commodities. Fluctuations in the exchange rate can also cause inflation.

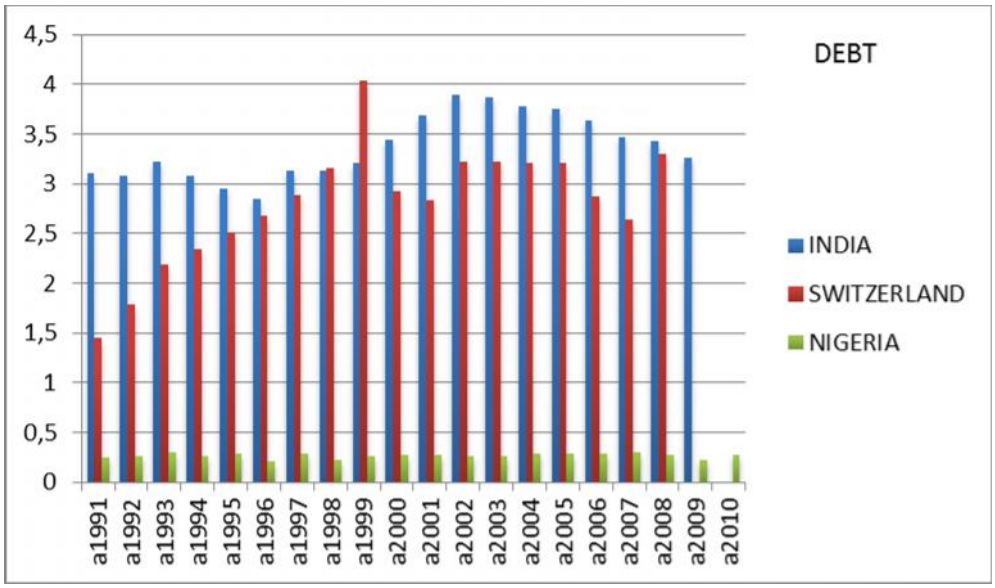

Figura 6 Graph of data analysis of Debt

Switzerland is among the highest global national debt, a well-known tax haven for the rich, who owe the equivalent of 441.95% times their GDP with total debts of 1.34 trillion to foreign parties. With the population of approximately 7.74m this equates to $174,562 person. India and Nigeria has lower debt profile.

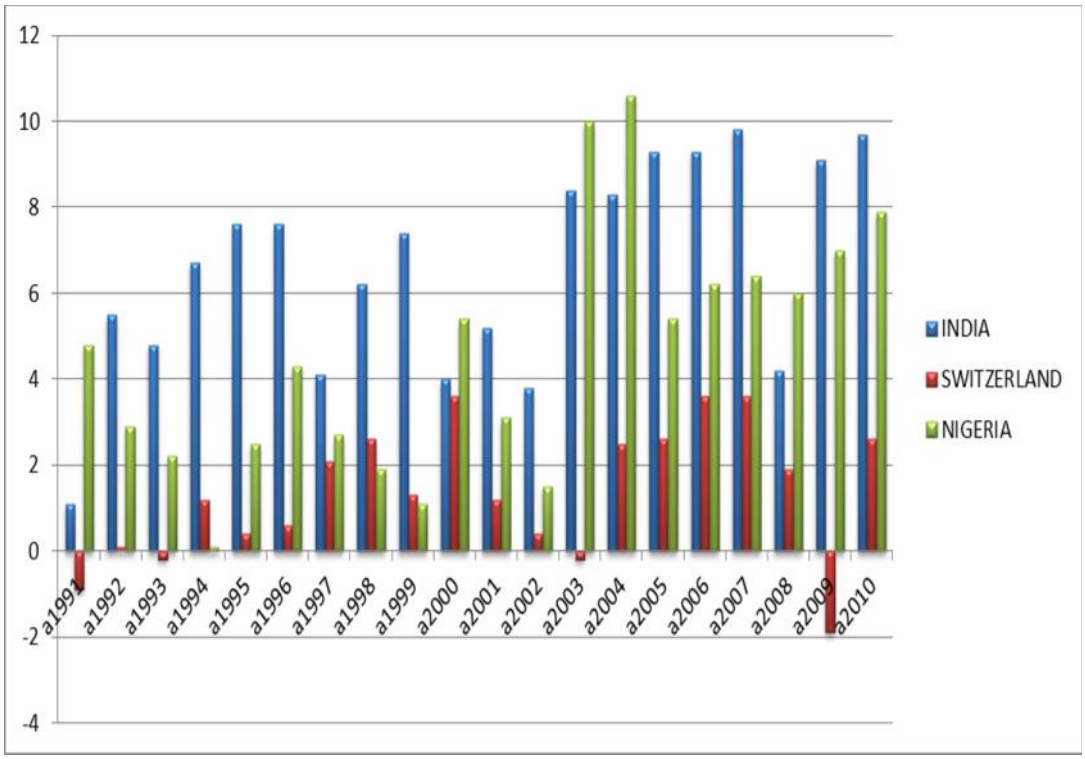

Figura 7 Graph of the GDPGR for the 3 countries

Nigeria has the mean, standard deviation and variance with values of 4.99, 2.759 and 7.782 respectively. These values show that the GDPGR for the period under review has a narrow variability with the low growth rate at fairly close range; the purchasing power parity is low. This is as a result of the ongoing assault against offshoring activity on Nigeria oil and gas production, general political instability, economic mismanagement and the threat of Islamist radicalism which imposes the greatest challenge confronting the nation and discouraging the influx of FDI which also has an impact of the GDP.

India has the mean, standard deviation and variance of 1.11, 1.67 and 2.778 respectively. It shows that the GDPGR has a narrow variability and the growth rate is absolutely very low. This could be attributed to a high population growth rate, with low purchasing power parity.
Switzerland has the mean, standard deviation and the variance of 88.576, 9.93 and 98 respectively. The value shows that the GDPGR has wide variability and the growth rate is very high, high living standard with very high purchasing power parity.

Having critically experimented on the effect of independent variables on dependent variable, we try to predict the effect of offshoring activities in Nigeria following the detailed analysis of six explanatory variables which majorly was the determinants of economic growth using the linear regression model.
After checking for the model fit, we might want to know the relative importance of each of these explanatory variables on economic growth which invariable offshoring and global supply chain activities drives. The coefficients of the estimated regression model which determines the increasing or decreasing of each of these parameters.

5.2 *RESULTS*

The results of the linear regression of the GDPGR against the six variables with their coefficients gave various values for each coefficient for a particular country. With a covariance matrix for each country the variances of each coefficient for the six independent variables were determined. Using a hypothesis values which was assumed to be zero as shown in tables 6, 7, 8, below for the three countries. A Student Test was performed on each parameter to see it deviation at a significant level of 5%.
The T- statistic and the significance levels and their predicted sign were also depicted. The T- statistic along with the sign and significance level of each variable can tell us many things about the effect of the independent variables on the GDPGR. The T-test looks at specific variables for the various countries. India has shown an increasing trend in the inflow of Foreign Direct investment in the last Eight years due to increasing wave of ICT which has positive correlation with their GDP growth rate.

It also observed that there was unprecedented inflow of FDI in Nigeria since last Eight years especially in the oil and gas sector, especially when there is a war in the other OPEC countries which results to positive GDPGR for Nigeria.

Tabella 6 *Shows Student Test for India parameters*

Estimators	ầ	a_o	√σNıı	$\sigma/_2$	tobs	t0.975	Remarks
a	7.36009176	0	1.53437	0.025	0.0594	2.16	accept
b_1	-0.228096	0	0.00001	0.025	-0.664125	2.16	accept
b_2	-1.268852	0	0.00018	0.025	-0.95516	2.16	accept
b_3	-0.076678	0	0.00015	0.025	-0.062807	2.16	accept
b_4	0.5317576	0	0.00012	0.025	0.48166	2.16	accept
b_5	-0.293815	0	0.00000347	0.025	-1.57548	2.16	accept
b_6	-0.06144	0	0.0000008	0.025	-0.6770	2.16	accept

Tabella 7 *Shows student Test for Switzerland*

Estimators	ầ	a_o	√σNıı	$\sigma/_2$	tobs	t0.975	Remarks
a	2.398321	0	2.89216	0.025	0.0141	2.16	accept
b_1	0.10096	0	.006449	0.025	0.10096	2.16	accept
b_2	0.07894	0	.027639	0.025	0.4748	2.16	accept
b_3	-0.29299	0	.024375	0.025	-1.8766	2.16	accept
b_4	0.58177	0	.18626	0.025	1.348	2.16	accept
b_5	-0.56943	0	.253813	0.025	-1.13026	2.16	accept
b6	0.11399	0	.0030776	0.025	0.6498	2.16	accept

Tabella 8 *Shows Student test for Nigeria parameters*

Estimators	ầ	a_o	√σNıı	σ/2	tobs	t0.975	Remarks
a	3.59822	0	47.32033	0.025	0.52307	2.16	accept
b_1	0.233657	0	.0077289	0.025	2.657	2.16	Outlier
b_2	-0.73596	0	.090552	0.025	-2.4457	2.16	accept
b_3	-0.09065	0	.010367	0.025	-0.890277	2.16	accept
b_4	-0.03011	0	.009193	0.025	-0.314055	2.16	accept
b_5	-0.04895	0	.000423	0.025	-2.3808	2.16	accept
b_6	0.006474	0	.013973	0.025	0.05477	2.16	accept

The Government spending and investment from our analysis also represent the structural theory of economic growth for these countries which suggests that government spending decreases economic growth rates but total investment (including government investment) particularly in the case of developing country like Nigeria increases economic development growth.

The combination of the signs on both government spending and total investment lead to the conclusion that higher investment (World Bank indicators,

infrastructures) is more important than government spending which could be enhanced through offshoring activities.

The last category of independent variables includes the macroeconomic indicators. The model reports that debt causes a decrease in the GDP growth. Nigeria debt since the debt relief by the Paris club has contributed the recent GDP growth. Although from our analysis, it also suggests that high level of government debt may probably lead to high level of economic growth provided that it is invested in such a productive means as investment in human capital development.

When looking at the results of the linear regression shown on table of residuals, it is important to point out that the values of the dummy variables for Switzerland is very high followed by Nigeria and finally India.

This shows that Nigeria export as an integral part of offshoring as most MNEs who offshore can re-export back to their country of origin and global supply chain stimulate the country's economic growth rate.

Overwhelmingly, the results of this analysis proved that offshoring and global chain have linkage with stable macroeconomic policies stimulate economic growth in Nigeria.

5.3 *CONCLUSION*

The main conclusion which can be drawn from these empirical studies which has a wide variety of economic variables has highly successful in explaining the variance in GDPGR in Nigeria. Variables explaining outward orientation, government and macroeconomic indicators which offshoring activity are linked to the determinants of economic growth.

This research work also shows that increased levels of offshoring and global supply chain through FDI, export and domestic investment will help support increased levels of economic growth. However, it has been shown that government spending will decrease economic growth; Nigeria governments need to use this discretion to integrate offshoring and global supply with a view to enhancing the socio-economic wellbeing of the citizenry. one limitation of this work is that data are not easy to get from developing country like Nigeria and I recommend the continuation of this research work that would further look into issues that will be an incentive for foreign investors into offshoring activities in Nigeria as there are enormous untapped potentials as Nigeria gas reserves estimated at 187 trillion cubic feet and a further undiscovered potential of about 600 trillion cubic feet through Nigeria's industrial rebirth.

Hypotheses development

Tabella 9 *Chi-Square test of the GDPGR*

country	variance	Hypothesis value	Degree of freedom	Significant level	Chi-Squ Estimator	Chi-Squ 0.95	comment
Switzerland	98.5064	97.910	13	5%	13.079	23.7	accepted
India	2.7880	2.618	13	5%	13.79	23.7	accepted
Nigeria	7.7821	6.699	13	5%	15.10	23.7	accepted

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Appendix

Variable Definitions

*Sources of Data
Annual data on export, FDI, Spend, Investment, Inflation and debt are obtained from world bank Development Indicators 2010. All these data are expressed as a percentage of GDP.

* Definitions taken from World Development Indicators, World Bank Tables, 1998
GDP growth (annual %)
Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates based on constant 1995 U.S. dollars. GDP measures the total output of goods and services for final use occurring within the domestic territory of a given country, regardless of the allocation to domestic and foreign claims. Gross domestic product at purchaser values(Market prices) is the sum of gross value added by all resident and nonresident producers in the economy plus any taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions of fabricated assets or for depletion and degradation of natural resources.
Exports of goods and services (% of GDP)
Exports of goods and services represent the value of all goods and other market services provided to the world. Included is the value of merchandise, freight, insurance, travel, and other nonfactor services), such as investment income, interest, and labor income, is excluded.
Foreign direct Investment, net inflows (% of GDP)
Foreign direct investment is the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, short-term capital as shown in the balance of payments.
Expenditure, total (% of GDP)
Total expenditure of the central government includes no repayable current and capital (development) expenditure. It includes expenditures financed by grants in kind and other cash adjustments, but does not include government lending or repayments to the government or government acquisition of equity for public policy purposes. Data are shown for central government only.
Gross domestic investment (% of GDP)
Gross domestic investment consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements(fences, ditches, drains, and so on): plant, machinery, and

equipment purchases; and the construction of roads, railways, and the like ,including commercial and industrial buildings, offices, schools, hospitals, private residential dwellings. Inventories are stock of goods held by firms to meet temporary or unexpected fluctuations in production or sales.

Inflation, GDP deflator (annual %)

Inflation as measured by the annual growth rate of the GDP implicit deflator. GDP implicit deflator measures the average annual rate of price change in the economy as a whole for the periods shown.

Central government debt, total (% of GDP)

Total debt is the entire stock of direct, government, fixed term contractual obligations to others outstanding as a particular date. It includes domestic debt (such as debt by monetary authorities, deposit money banks, non-financial public enterprises, and households) and foreign debt (such as debt to international development institutions and foreign governments). It is the gross amount of government liabilities not reduced by the amount of government claims against others. Because debt is a stock rather than a flow, it is measured as of a given date, usually the last day of the fiscal year. Data are shown for central government only.

(Source of Data World Bank)

Shows the Residuals for the 3 countries for the period of 20 years

	SWITZERLAND	INDIA	NIGERIA
V_1	9.9211	-2.8819	0.6912
V_2	10.3120	-0.7260	0.6357
V_3	11.7479	0.8198	0.2232
V_4	12.0705	1.4167	-0.2875
V_5	10.1361	0.7087	-1.2992
V_6	13.4057	2.7581	-0.0135
V_7	7.2013	-1.3854	-3.5494
V_8	11.3752	1.6737	-2.6392
V_9	7.0076	-0.3936	-3.8399
V_{10}	4.2383	-1.8446	-2.0343
V_{11}	4.6850	-0.2640	-3.3824
V_{12}	2.3244	-1.4269	-0.6241
V_{13}	5.5571	1.6940	4.5356
V_{14}	3.1101	0.1459	3.7708
V_{15}	0.0626	-0.7517	0.2404
V_{16}	0.4712	1.1590	0.6627
V_{17}	-0.8190	-0.2735	1.0076
V_{18}	-2.6987	0.7440	1.5819
V_{19}	1.4354	0.7747	2.3186
V_{20}	13.5347	-0.4589	2.0017

Shows the GDPGR Estimated out of the Regression Model for India

Year	Y GPDGR OBSERVED	Ỳ GDPGR PREDICTED	ξ =Yi-Ỳ RESIDUALS
1991	1.1	3.9819	-2.8819
1992	5.5	6.2260	-0.7260
1993	4.8	3.9802	0.8190
1994	6.7	5.2833	1.4167
1995	7.6	6.8913	0.7087
1996	7.6	4.8419	2.7581
1997	4.1	5.4854	-1.3854
1998	6.2	4.5263	1.6737
1999	7.4	7.7936	-0.3936
2000	4.0	5.8446	-1.8446
2001	5.2	5.4640	-0.2640
2002	3.8	5.2269	-1.4269
2003	8.4	6.7060	1.6940
2004	8.3	8.1541	0.1459
2005	9.3	10.0517	-0.7517
2006	9.3	8.1410	1.1590
2007	9.8	10.0735	-0.2735
2008	4.2	4.9440	-0.7440
2009	9.1	8.3253	0.7747
2010	9.7	10.1589	-0.4589

Shows the GDPGR Estimated out of the Regression model for Switzerland

Year	Y GPDGR OBSERVED	Ỳ GDPGR PREDICTED	ξ =Yi-Ỳ RESIDUALS
1991	-0.9	-8.8211	9.9211
1992	0.1	-4.8120	10.3120
1993	-0.2	-6.9479	11.7479
1994	1.2	-5.3705	12.0705
1995	0.4	-2.5361	10.1361
1996	0.6	-5.8057	13.4057
1997	2.1	-3.1013	7.2013
1998	2.6	-5.1752	11.3752
1999	1.3	0.3924	7.0076
2000	3.6	-0.2383	4.2383
2001	1.2	0.5150	4.6850
2002	0.4	1.4756	2.3244
2003	-0.2	2.8429	5.5571
2004	2.5	5.1899	3.1101
2005	2.6	9.2374	0.0626
2006	3.6	8.8288	0.4712
2007	3.6	10.6190	-0.8190
2008	1.9	6.8987	-2.6987
2009	-1.9	7.6646	1.4354
2010	2.6	-3.8347	13.5347

Shows the GDPGR Estimated out of the Regression model for Nigeria

Year	Y GPDGR OBSERVED	Ỳ GDPGR PREDICTED	∑ =Yi-Ỳ RESIDUALS
1991	4.8	4.1088	0.6912
1992	2.9	2.2643	0.6357
1993	2.2	1.9768	0.2232
1994	0.1	0.3875	-0.2875
1995	2.5	3.7992	-1.2992
1996	4.3	4.3135	-0.0135
1997	2.7	6.2494	-3.5494
1998	1.9	4.5392	-2.6392
1999	1.1	4.9399	-3.8399
2000	5.4	7.4343	-2.0343
2001	3.1	6.4824	-3.3824
2002	1.5	2.1241	-0.6241
2003	10.3	5.7644	4.5356
2004	10.6	6.8292	3.7708
2005	5.4	5.1596	0.2404
2006	6.2	5.5373	0.6627
2007	6.4	5.3924	1.0076
2008	6.0	4.4181	1.5819
2009	7.0	4.6814	2.3186
2010	7.9	5.8983	2.0017

V Residuals Chi-Square (γ_obs) is given below.

$$\frac{\sum_0^2(n-m)}{\delta_0^2} \sim \gamma_{obs}$$

Σ_0^2: ***Represent the estimated variance***

(n-m) Represent the degree of freedom

The chi-square takes a looks at the whole distribution of the GDP of these countries with a significant level of 5% and different hypothesis value for each country. The estimated variance tells us about the growth rate which was necessitated as a result of the offshoring and global supply chain. For the period of twenty years as compared to the number of parameters gave us a degree of freedom of 13. The high value of the degree of freedom gives room for varying of the parameters. The table 4, shows for each country the result of the Chi-Square test. This gives us the distribution of the GDPGR for the twenty years in each case. The Chi-square test performed has accepted values for the countries

proving that offshoring and global supply chain activities have positive effect on these countries GDPGR.

Data Analysis

```
%%
%%INDIA DATA ANALYSIS
%%A-MATRIX OF INDEPENDENT VARIABLE
%%S- MATRIX OF GDPGR FOR 20 YEARS
%%

A=[1 8.6 0 78 22 13.7 50.6;1 8.9 0.1 77 23.8 9 50.2;1 9.9 0.2 78.8 21.2 9.8
52.4;1 10 0.3 76.8 23.5 10 50.2;1 11 0.6 74.6 26.6 9.1 48;1 10.5 0.6 79.1 22.1
7.5 46.3;1 10.8 0.9 77.4 23.9 6.5 51;1 11.2 0.6 79 22.6 8 50.9;1 11.7 0.5 75.8
26.1 3.8 52.3;1 13.2 0.8 76.8 24.2 3.5 56;1 12.8 1.1 76.7 24.2 3 60;1 14.5 1.1
75.8 25.2 3.8 63.5;1 14.8 0.7 74.5 26.8 3.6 63;1 17.6 0.8 68.9 32.8 8.7 61.5;1
19.3 0.9 68.1 34.7 4.2 61.2;1 21.3 2.1 67.4 35.7 6.4 59.1;1 20.4 2.1 65.9 38.1 5.8
56.5;1 23.5 3.6 70.9 34.5 6.7 55.8;1 19.6 2.6 68 36.5 7.5 53;1 18.5 1.4 73.9 32.5
9.6 0]
S=[1.1;5.5;4.8;6.7;7.6;7.6;4.1;6.2;7.4;4.0;5.2;3.8;8.4;8.3;9.3;9.3;9.8;4.2;9.1;9.7]
IND_N=A'*A
IND_Tn=A'*S;
IND_IvN=inv(IND_N)
IND_PAR=(IND_IvN)*IND_Tn
Se_ind= A*IND_PAR
E_ind= S - Se_ind
Var = (E_ind'*E_ind)/13
covarIND = Var*IND_IvN
A =

   1.0000    8.6000         0   78.0000   22.0000   13.7000   50.6000
   1.0000    8.9000    0.1000   77.0000   23.8000    9.0000   50.2000
   1.0000    9.9000    0.2000   78.8000   21.2000    9.8000   52.4000
   1.0000   10.0000    0.3000   76.8000   23.5000   10.0000   50.2000
   1.0000   11.0000    0.6000   74.6000   26.6000    9.1000   48.0000
   1.0000   10.5000    0.6000   79.1000   22.1000    7.5000   46.3000
   1.0000   10.8000    0.9000   77.4000   23.9000    6.5000   51.0000
   1.0000   11.2000    0.6000   79.0000   22.6000    8.0000   50.9000
   1.0000   11.7000    0.5000   75.8000   26.1000    3.8000   52.3000
```

1.0000	13.2000	0.8000	76.8000	24.2000	3.5000	56.0000
1.0000	12.8000	1.1000	76.7000	24.2000	3.0000	60.0000
1.0000	14.5000	1.1000	75.8000	25.2000	3.8000	63.5000
1.0000	14.8000	0.7000	74.5000	26.8000	3.6000	63.0000
1.0000	17.6000	0.8000	68.9000	32.8000	8.7000	61.5000
1.0000	19.3000	0.9000	68.1000	34.7000	4.2000	61.2000
1.0000	21.3000	2.1000	67.4000	35.7000	6.4000	59.1000
1.0000	20.4000	2.1000	65.9000	38.1000	5.8000	56.5000
1.0000	23.5000	3.6000	70.9000	34.5000	6.7000	55.8000
1.0000	19.6000	2.6000	68.0000	36.5000	7.5000	53.0000
1.0000	18.5000	1.4000	73.9000	32.5000	9.6000	0

S =

1.1000
5.5000
4.8000
6.7000
7.6000
7.6000
4.1000
6.2000
7.4000
4.0000
5.2000
3.8000
8.4000
8.3000
9.3000
9.3000
9.8000
4.2000
9.1000
9.7000

IND_N =

1.0e+005 *

```
    0.0002    0.0029    0.0002    0.0148    0.0056    0.0014    0.0104
    0.0029    0.0456    0.0037    0.2103    0.0849    0.0194    0.1504
    0.0002    0.0037    0.0004    0.0151    0.0066    0.0013    0.0110
    0.0148    0.2103    0.0151    1.1038    0.4086    0.1045    0.7705
    0.0056    0.0849    0.0066    0.4086    0.1612    0.0385    0.2899
    0.0014    0.0194    0.0013    0.1045    0.0385    0.0113    0.0700
    0.0104    0.1504    0.0110    0.7705    0.2899    0.0700    0.5759


IND_lvN =

  1.0e+003 *

    5.5036    0.0027    0.0439   -0.0542   -0.0482   -0.0037   -0.0038
    0.0027    0.0000   -0.0000   -0.0000   -0.0000    0.0000   -0.0000
    0.0439   -0.0000    0.0006   -0.0004   -0.0004   -0.0000   -0.0000
   -0.0542   -0.0000   -0.0004    0.0005    0.0005    0.0000    0.0000
   -0.0482   -0.0000   -0.0004    0.0005    0.0004    0.0000    0.0000
   -0.0037    0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000
   -0.0038   -0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000


IND_PAR =

    7.3601
   -0.2281
   -1.2689
   -0.0767
    0.5318
   -0.2938
   -0.0614


Se_ind =

    3.9819
    6.2260
    3.9802
    5.2833
```

6.8913
4.8419
5.4854
4.5263
7.7936
5.8446
5.4640
5.2269
6.7060
8.1541
10.0517
8.1410
10.0735
4.9440
8.3253
10.1589

E_ind =

-2.8819
-0.7260
0.8198
1.4167
0.7087
2.7581
-1.3854
1.6737
-0.3936
-1.8446
-0.2640
-1.4269
1.6940
0.1459
-0.7517
1.1590
-0.2735
-0.7440
0.7747
-0.4589

Var =

2.7880

covarIND =

1.0e+004 *

1.5344	0.0007	0.0122	-0.0151	-0.0134	-0.0010	-0.0011
0.0007	0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000
0.0122	-0.0000	0.0002	-0.0001	-0.0001	-0.0000	-0.0000
-0.0151	-0.0000	-0.0001	0.0001	0.0001	0.0000	0.0000
-0.0134	-0.0000	-0.0001	0.0001	0.0001	0.0000	0.0000
-0.0010	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
-0.0011	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000

```
%%
%%SWITZERLAND DATA ANALYSIS
%%As-MATRIX OF INDEPENDENT VARIABLE
%%Ss- MATRIX OF GDPGR FOR 20 YEARS
%%

As=[1 35.4 1.2 70.2 27.3 5.4 12.7;1 36.1 0.4 71.9 23.8 2 15.7;1 36.6 0.7 71.7
22.4 2.4 19.2;1 36.2 1.4 71 23.6 1.3 20.5;1 35.9 1.3 71.5 23.4 0.7 22;1 36.5 1.4
72.6 22.6 0.2 23.5;1 40.2 2.8 72.5 22.2 -0.1 25.3;1 40.6 3.5 71.6 23.6 0.3 27.7;1
42 4.6 71.9 22.9 0.6 35.4;1 46.5 7.9 71 23.2 1.1 25.6;1 45.9 3.7 72 23.1 0.8
24.8;1 44.4 2.4 72.2 21.3 .5 28.3;1 44 5.4 72.2 20.7 1 28.3;1 46.3 .5 72.1 21 .6
28.1;1 49 .1 71.7 21.6 .1 28.1;1 52.5 11.5 69.6 22.1 2.1 25.2;1 56.2 7.7 67.8 22
2.5 23.2;1 56.5 3.2 67.5 21.1 2.5 28.9;1 51.7 5.6 69.3 19.7 .3 0;1 0 -1.2 0 0 -.5 0]
Ss=[-0.9;0.1;-0.2;1.2;0.4;0.6;2.1;2.6;1.3;3.6;1.2;0.4;-0.2;2.5;2.6;3.6;3.6;1.9;-
1.9;2.6]
SWI_N=As'*As
SWI_Tn=As'*Ss
SWI_IvN=inv(SWI_N)
```

SWI_PAR=(SWI_IvN)*SWI_Tn
Se_swi= A*SWI_PAR
E_swi= S - Se_swi
Var_swi = (E_swi'*E_swi)/13
covarSWI = Var*SWI_IvN

As =

1.0000	35.4000	1.2000	70.2000	27.3000	5.4000	12.7000
1.0000	36.1000	0.4000	71.9000	23.8000	2.0000	15.7000
1.0000	36.6000	0.7000	71.7000	22.4000	2.4000	19.2000
1.0000	36.2000	1.4000	71.0000	23.6000	1.3000	20.5000
1.0000	35.9000	1.3000	71.5000	23.4000	0.7000	22.0000
1.0000	36.5000	1.4000	72.6000	22.6000	0.2000	23.5000
1.0000	40.2000	2.8000	72.5000	22.2000	-0.1000	25.3000
1.0000	40.6000	3.5000	71.6000	23.6000	0.3000	27.7000
1.0000	42.0000	4.6000	71.9000	22.9000	0.6000	35.4000
1.0000	46.5000	7.9000	71.0000	23.2000	1.1000	25.6000
1.0000	45.9000	3.7000	72.0000	23.1000	0.8000	24.8000
1.0000	44.4000	2.4000	72.2000	21.3000	0.5000	28.3000
1.0000	44.0000	5.4000	72.2000	20.7000	1.0000	28.3000
1.0000	46.3000	0.5000	72.1000	21.0000	0.6000	28.1000
1.0000	49.0000	0.1000	71.7000	21.6000	0.1000	28.1000
1.0000	52.5000	11.5000	69.6000	22.1000	2.1000	25.2000
1.0000	56.2000	7.7000	67.8000	22.0000	2.5000	23.2000
1.0000	56.5000	3.2000	67.5000	21.1000	2.5000	28.9000
1.0000	51.7000	5.6000	69.3000	19.7000	0.3000	0
1.0000	0	-1.2000	0	0	-0.5000	0

Ss =

-0.9000
0.1000
-0.2000
1.2000
0.4000
0.6000
2.1000

```
    2.6000
    1.3000
    3.6000
    1.2000
    0.4000
   -0.2000
    2.5000
    2.6000
    3.6000
    3.6000
    1.9000
   -1.9000
    2.6000
```

SWI_N =

1.0e+004 *

0.0020	0.0833	0.0064	0.1350	0.0428	0.0024	0.0442
0.0833	3.7357	0.3095	5.9034	1.8611	0.1058	1.9505
0.0064	0.3095	0.0395	0.4602	0.1449	0.0088	0.1548
0.1350	5.9034	0.4602	9.6005	3.0394	0.1709	3.1503
0.0428	1.8611	0.1449	3.0394	0.9670	0.0569	0.9936
0.0024	0.1058	0.0088	0.1709	0.0569	0.0062	0.0513
0.0442	1.9505	0.1548	3.1503	0.9936	0.0513	1.1353

SWI_Tn =

1.0e+003 *

```
    0.0271
    1.1637
    0.1185
    1.7332
    0.5480
    0.0243
    0.7050
```

SWI_IvN =

1.0374	-0.0093	0.0140	0.0020	-0.0411	0.0464	0.0020
-0.0093	0.0023	-0.0030	-0.0032	0.0070	-0.0067	-0.0003
0.0140	-0.0030	0.0099	0.0028	-0.0055	0.0038	0.0000
0.0020	-0.0032	0.0028	0.0087	-0.0232	0.0202	0.0001
-0.0411	0.0070	-0.0055	-0.0232	0.0668	-0.0616	-0.0012
0.0464	-0.0067	0.0038	0.0202	-0.0616	0.0910	0.0027
0.0020	-0.0003	0.0000	0.0001	-0.0012	0.0027	0.0011

SWI_PAR =

2.3983
0.1010
0.0789
-0.2930
0.5818
-0.5694
0.1140

Se_swi =

-8.8211
-4.8120
-6.9479
-5.3705
-2.5361
-5.8057
-3.1013
-5.1752
0.3924
-0.2383
0.5150
1.4756
2.8429
5.1899
9.2374

```
    8.8288
   10.6190
    6.8987
    7.6646
   -3.8347
```

E_swi =

```
    9.9211
   10.3120
   11.7479
   12.0705
   10.1361
   13.4057
    7.2013
   11.3752
    7.0076
    4.2383
    4.6850
    2.3244
    5.5571
    3.1101
    0.0626
    0.4712
   -0.8190
   -2.6987
    1.4354
   13.5347
```

Var_swi =

```
   98.5064
```

Covar SWI =

```
    2.8922   -0.0260    0.0391    0.0056   -0.1146    0.1295    0.0054
   -0.0260    0.0064   -0.0082   -0.0089    0.0196   -0.0185   -0.0007
```

```
   0.0391   -0.0082    0.0276    0.0078   -0.0153    0.0107    0.0000
   0.0056   -0.0089    0.0078    0.0244   -0.0646    0.0564    0.0002
  -0.1146    0.0196   -0.0153   -0.0646    0.1863   -0.1718   -0.0032
   0.1295   -0.0185    0.0107    0.0564   -0.1718    0.2538    0.0077
   0.0054   -0.0007    0.0000    0.0002   -0.0032    0.0077    0.0031


%%
%%NIGERIA DATA ANALYSIS
%%A-MATRIX OF INDEPENDENT VARIABLE
%%S- MATRIX OF GDPGR FOR 20 YEARS
%%

A=[1 37.2 2.6 47 42 20.2 38;1 42.2 2.7 45 43 83.6 40;1 47.1 6.3 50 39 52.6 45;1
41.8 8.3 51 38 27.8 40;1 44.3 3.8 40 42 56 43;1 48.1 4.5 50 31 39.9 32;1 45 4.2
44 33 1.4 43;1 33.5 3.3 44 32 -5.6 34;1 36.5 2.9 38 42 12.3 40;1 54 2.5 44 45
38.2 42;1 43 2.5 40 48 10.7 42;1 31.9 3.2 44 43 31.5 39;1 42.7 3 45 41 11.2 40;1
44 2.1 38 44 20.7 43;1 46.5 4.4 47 37 19.8 43;1 42.9 3.3 42 39 19.6 44;1 41 3.6
43 43 4.8 45;1 41.7 4 50 39 11 41;1 36.8 5.1 33 40 -4.5 33;1 39.4 3.1 40 30 7.5
42]
S=[4.8;2.9;2.2;0.1;2.5;4.3;2.7;1.9;1.1;5.4;3.1;1.5;10.3;10.6;5.4;6.2;6.4;6.0;7.0;7.9
]
NIJ_N=A'*A
NIJ_Tn=A'*S
NIJ_IvN=inv(NIJ_N)
NIJ_PAR=(NIJ_IvN)*NIJ_Tn
Se_nij= A*NIJ_PAR
E_nij= S - Se_nij
Var_nij = (E_nij'*E_nij)/13
covarNIJ = Var*NIJ_IvN

A =

   1.0000   37.2000    2.6000   47.0000   42.0000   20.2000   38.0000
   1.0000   42.2000    2.7000   45.0000   43.0000   83.6000   40.0000
   1.0000   47.1000    6.3000   50.0000   39.0000   52.6000   45.0000
   1.0000   41.8000    8.3000   51.0000   38.0000   27.8000   40.0000
   1.0000   44.3000    3.8000   40.0000   42.0000   56.0000   43.0000
   1.0000   48.1000    4.5000   50.0000   31.0000   39.9000   32.0000
   1.0000   45.0000    4.2000   44.0000   33.0000    1.4000   43.0000
```

1.0000	33.5000	3.3000	44.0000	32.0000	-5.6000	34.0000
1.0000	36.5000	2.9000	38.0000	42.0000	12.3000	40.0000
1.0000	54.0000	2.5000	44.0000	45.0000	38.2000	42.0000
1.0000	43.0000	2.5000	40.0000	48.0000	10.7000	42.0000
1.0000	31.9000	3.2000	44.0000	43.0000	31.5000	39.0000
1.0000	42.7000	3.0000	45.0000	41.0000	11.2000	40.0000
1.0000	44.0000	2.1000	38.0000	44.0000	20.7000	43.0000
1.0000	46.5000	4.4000	47.0000	37.0000	19.8000	43.0000
1.0000	42.9000	3.3000	42.0000	39.0000	19.6000	44.0000
1.0000	41.0000	3.6000	43.0000	43.0000	4.8000	45.0000
1.0000	41.7000	4.0000	50.0000	39.0000	11.0000	41.0000
1.0000	36.8000	5.1000	33.0000	40.0000	-4.5000	33.0000
1.0000	39.4000	3.1000	40.0000	30.0000	7.5000	42.0000

S =

4.8000
2.9000
2.2000
0.1000
2.5000
4.3000
2.7000
1.9000
1.1000
5.4000
3.1000
1.5000
10.3000
10.6000
5.4000
6.2000
6.4000
6.0000
7.0000
7.9000

NIJ_N =

1.0e+004 *

0.0020	0.0840	0.0075	0.0875	0.0791	0.0459	0.0809
0.0840	3.5757	0.3180	3.6871	3.3233	2.0107	3.4100
0.0075	0.3180	0.0325	0.3357	0.2936	0.1769	0.3043
0.0875	3.6871	0.3357	3.8703	3.4488	2.0724	3.5405
0.0791	3.3233	0.2936	3.4488	3.1735	1.8658	3.2112
0.0459	2.0107	0.1769	2.0724	1.8658	1.9966	1.8805
0.0809	3.4100	0.3043	3.5405	3.2112	1.8805	3.2989

NIJ_Tn =

1.0e+003 *

0.0923
3.9291
0.3153
3.9607
3.6631
1.7505
3.7563

NIJ_IvN =

16.9731	-0.0460	-0.0437	-0.1513	-0.1319	0.0219	-0.0864
-0.0460	0.0028	-0.0000	-0.0005	0.0003	-0.0002	-0.0014
-0.0437	-0.0000	0.0325	-0.0039	0.0022	0.0000	0.0001
-0.1513	-0.0005	-0.0039	0.0037	0.0009	-0.0002	-0.0002
-0.1319	0.0003	0.0022	0.0009	0.0033	-0.0002	-0.0013
0.0219	-0.0002	0.0000	-0.0002	-0.0002	0.0002	0.0001
-0.0864	-0.0014	0.0001	-0.0002	-0.0013	0.0001	0.0050

NIJ_PAR =

3.5982
0.2337

-0.7360
-0.0906
-0.0301
-0.0489
0.0065

Se_nij =

4.1088
2.2643
1.9768
0.3875
3.7992
4.3135
6.2494
4.5392
4.9399
7.4343
6.4824
2.1241
5.7644
6.8292
5.1596
5.5373
5.3924
4.4181
4.6814
5.8983

E_nij =

0.6912
0.6357
0.2232
-0.2875
-1.2992
-0.0135
-3.5494

-2.6392
-3.8399
-2.0343
-3.3824
-0.6241
4.5356
3.7708
0.2404
0.6627
1.0076
1.5819
2.3186
2.0017

Var_nij =

7.7821

CovarNIJ =

47.3203	-0.1282	-0.1218	-0.4218	-0.3678	0.0611	-0.2408
-0.1282	0.0077	-0.0001	-0.0014	0.0008	-0.0005	-0.0038
-0.1218	-0.0001	0.0906	-0.0108	0.0062	0.0000	0.0003
-0.4218	-0.0014	-0.0108	0.0104	0.0026	-0.0007	-0.0005
-0.3678	0.0008	0.0062	0.0026	0.0092	-0.0007	-0.0037
0.0611	-0.0005	0.0000	-0.0007	-0.0007	0.0004	0.0002
-0.2408	-0.0038	0.0003	-0.0005	-0.0037	0.0002	0.0140

INDEX

INDEX	MEANING OF THE INDEX
OCED	Organization for Economic Cooperation and Development
MNEs	Multinational Enterprises
FDI	Foreign Direct Investment
TNCs	Transnational Corporations
BIS	Bank for International Settlement
PSI	Policy Support Instrument
SAP	Structural Adjustment Program me
IMF	International Monetary Fund
TCF	Trillion Cubic feet
E-MNEs	Emergence of Emerging Market Multinational Enterprises
SF	Specific factor
OEMs	Original Equipment Manufactures
GDPGR	Gross Domestic Product Growth Gate