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THE IMPACT OF AN EFFECTIVE INTELLECTUAL PROPERTY REGIME ON THE PRODUCTION OF GOODS AND SERVICES IN LIBERIA

BY

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A DISSERTATION/THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN INTELLECTUALPROPERTY IN THE COLLEGE OF BUSINESS, PEACE LEADERSHIP ANDGOVERNANCE

2021

Abstract

Liberia is a fragile state that is yet to recover from the devastating impact of the 14 years civil unrest. In-addition Liberia suffered what is referred to as the twin shock in 2014-the eruption of the so-called EBOLA Virus Disease (EVD) and the fallen global commodity prices of Liberia two major export commodities (rubber and Iron ore). As a result, Liberia is faced with huge macroeconomic in-balances, limited fiscal space, poor health infrastructures, weak public health system, food insecurity and malnutrition. In early 2020, the COVID-19 pandemic emerged in the world when Liberia already had challenges domestically and externally; weak domestic Consumption and declining output made the Liberian economy to contract by an estimated 2.3 percent in 2019, while the rate of inflation eroded consumer purchasing power and the fiscal space by reaching 27 percent. The Government of Liberia therefore needs to derive other Policy options to diversify the economy and ultimately economic recovery. Liberia needs to therefore utilized the standard set by the global trading system and therefore make use of the pivotal role it plays in ensuring economic growth and development of developing and least developed countries. Intellectual property protection creates means for owners to realize returns on their investments to encourage new innovations. Hence, the legal framework of intellectual property rights is a key component to discourage unfair competitions. This study therefore examined the vital role an effective intellectual property regime can play on economic growth and development in Liberia taking into consideration its economic size and structure. This study also investigated the impact of intellectual property rights protection on economic growth. Evidence has shown that intellectual property rights contribute significantly to economic growth especially in developed countries. Most countries in South Saharan Africa (SSA) have not taken advantage of the immense benefits that intellectual property rights offer due to low human capacity and poor economic architecture. Thus, this study accessed the economic impact of Intellectual property with focus on industrial property in Liberia. Hence, this research investigated the effectiveness of an intellectual property regime in Liberia and to determine the impact on the production of goods and services for policy recommendations.

Keywords: Intellectual property rights (IPRs), Innovation and Economic growth and development

Declaration Page

I declare that from references to other works, which are acknowledged, this dissertation is the result of my own research work carried out under the supervision of Mr. Gabriel Muzah, College of Business**,** Peace Leadership and Governance, Africa University.

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Acknowledgments

I am grateful to GOD Almighty for the wisdom provided my supervisor, Mr. Gabriel Muzah, lecturer at the College of Business, Peace, Leadership and Governance (CBPLG), Africa University, for his scholarly guidance that enabled me complete this study in assessing my work to the standard required for a master's dissertation. I am grateful to the Africa Regional Intellectual Property Organization, the World Intellectual Property Organization, the Government of Japan and the Africa University for their joint sponsorship. I am thankful to Mr. George Mandewo, Coordinator of the MIP Program and Lecturer at the Africa University for his support and guidance.

Dedication

To my dearest wife, Mrs. Martina Weefur Shiakeh and my Children, I dedicate this work for their support and encouragement during this research. Especially during this time of the COVID-19 Pandemic

List of Acronyms and Abbreviations

AFCFTA	African Continental Free Trade Area
ARIPO	Africa Regional Intellectual Property Organization
AU	Africa University
AUREC	Africa University Research and Ethics Committee
CBD	Convention on Biodiversity
EU	European Union
FDI	Foreign Direct Investment
LIPO	Liberia Intellectual Property Office
IP	Intellectual Property
IPRs	Intellectual Property Rights
IRS	Internal Revenue Service
LDCs	Least Developed Countries
MIP	Master in Intellectual Property
MOCI	Ministry of Commerce and Industry
NIS	National Innovation System
OECD	Organization for Economic Cooperation and Development
R&D	Research and Development
MSMEs	Micro Small and medium Sized Enterprises
TK	Traditional Knowledge
TRIPS	Trade Related aspects of Intellectual Property Rights
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

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CHAPTER 1 INTRODUCTION

1.1 Introduction

Intellectual property is an intangible good derived from the intellect of the human mind. It is an intangible commodity that plays a significant role in economic growth and development depending on how effective the intellectual property regime and country specific characteristics is. The global trading system is therefore pivotal to the growth and development of developing and least developed countries. Intellectual property protection creates means for owners to realize returns on their investments to encourage new innovations. Hence, the legal framework of intellectual property rights is a key component to discourage unfair competitions.

This study examines the vital role of an effective intellectual property regime on economic growth and development in Liberia taking into consideration its economic size and structure. This study also investigates the impact of intellectual property rights protection on economic growth. Evidence has shown that intellectual property rights contribute significantly to economic growth especially in developed countries. Most countries in South Saharan Africa (SSA) have not taken advantage of the immense benefits that intellectual property rights offer due to low human capacity and poor economic structure. Thus, this study accesses the economic impact of Intellectual property with focus on industrial property in Liberia

1.2 Background to the Study

Liberia recognizes Intellectual Property as an instrument for economic growth and diversification since the early 19th century. In the year 1911, Liberia enacted its first

copyright law called “An Act Relating to Copyright”. Eighty-six years later, Liberia adopted the new copyright Act in 1997 and 2003, an Industrial Property Act.

The both laws were sleeping bull dogs that suffered setbacks due to clauses that were ambitious, unclear and inconsistent with the then socio-economic variables. In 2016 the government recognized the challenges with the then existing law and adopted the new Intellectual Property Act establishing the Liberia Intellectual Property Office (LIPO) that repealed both the Copyright Act of 1997 and the Industrial Property Act of 2003.

The Liberian Intellectual Property Office (LIPO) was established as a semi-autonomous agency that has a central administrative arm, a department for copyright and a department for industrial property. The semi-autonomous agency runs on the policy direction of the Ministry of Commerce and Industry to protect Intellectual Property Rights in and out of Liberia.

1.3 The Rebirth of the Intellectual Property System of Liberia

The new Intellectual Property Act of 2016 deals with international applications under the Madrid Protocol and the Swakopmund Protocol on the protection of Traditional Knowledge and Expression of Folklore within the ARIPO framework. The Act also took in account the National Treatment and the Most Favoured Nation Provisions.

1.4 Implementationof the new 2016 Intellectual Property Act

Due to the low financial and human capacity, there are lacks in the implementation of the 2016 intellectual property act. The system is unable to determine infringers of rights as evidenced by the limited cases of piracy or infringement in court since the establishment of the new intellectual property office and the enactment of the new intellectual property act. Hence, there has been a creation of a booming black market for musical works

1.5 Statement of the Problem

Liberia is a fragile state that is yet to recover from the devastating impact of the 14 years civil unrest. In-addition Liberia suffered what is referred to as the twin shock in 2014-the eruption of the so-called EBOLA Virus Disease (EVD) and the fallen global commodity prices of Liberia two major export commodities (rubber and Iron ore). As a result, Liberia is faced with huge macroeconomic in-balances, limited fiscal space, poor health infrastructures, weak public health system, food insecurity and malnutrition.

In early 2020, COVID-19 pandemic emerged in the world when Liberia already had challenges domestically and externally; weak domestic Consumption and declining output made the Liberian economy to contract by an estimated 2.3 percent in 2019, while the rate of inflation eroded consumer purchasing power and the fiscal space by reaching 27 percent.

The Government of Liberia therefore needs to derive other Policy options to diversify the economy and ultimately economic recovery.

1.6 Research Objectives

The economy of Liberia is experiencing a downturn and therefore needs policy options for economic recovery. Thus, the objectives of the study are as follow:

1. The main objective of the study is to examine the implications of an effective Intellectual Property Regime on the production of Goods and Services in Liberia
2. To establish possible implications of an effective intellectual property regime to innovators, creators and investors in Liberia
3. To investigate the economic impact of an effective legal framework regime of Intellectual property in Liberia

4. To suggest policy options that enhances economic diversification and recovery in Liberia

1.7 Research Questions

Below are the research questions:

1. What are the impacts of an effective intellectual property regime on the production of Goods and Services in Liberia?

2. What are the possible impact of implementing an effective intellectual property regime on innovators, creators and investors in Liberia?

3. What are the available opportunities to innovators, creators and investors from the implementation of an effective Intellectual Property Regime on goods and services in Liberia?

4. How can Liberia leverage on the knowledge economy as a means of enhancing economic diversification and economic recovery.

1.8 Assumptions/ Hypotheses

Below are the Assumptions/ Hypothesis:

- An effective intellectual property regime is a game changer for economic growth and development
- A robust Intellectual Property regime with effective legal framework is key to economic growth and development
- The role of a strong legal intellectual property framework can encourage innovation, invention, creativity and development

1.9 Significance of the Study

Considering the poor architecture framework of the intellectual property systems in Liberia, this study provides guidance for policy makers to develop and strengthen the

intellectual property systems in Liberia that encourage innovations, invention and creativity for policy options and economic diversification.

This study also plays a significant role in providing recommendations and knowledge to develop and strengthen the intellectual property systems through legal framework that will provide the necessary economic benefits for innovator and encourage economic development

1.10 Delimitation of the Study

This study examines the intellectual property regime in Liberia and uses secondary qualitative credible online data sources

1.11 Limitation of the Study

Due to the lack of sufficient time to design and administer questionnaire for the collection of primary qualitative data, the study relies on secondary qualitative data from credible online sources.

CHAPTER 2 REVIEW OF RELATED LITERATURE

2.1Introduction

This chapter is an overview of related theoretical and empirical literature on the impact of an effective intellectual property regime on the production of good and services. An effective Intellectual Property protection regime encourages innovation and economic development. According to the World Intellectual Property Organization (WIPO), there has been growing discussion amongst researchers and policy makers that an effective Intellectual property protection regime plays a key role in innovation (e.g. biotechnology, information and communication technologies and the cultural industries). World Bank (2002, 2003, 2005), World Intellectual Property Organization (WIPO) and UNCTAD in lots of publications indicated that protection of Intellectual property Rights generates revenues, improve balance of payment (BoP), increase access to international markets, provide investors with confidence, create employment opportunities and productivity and technical knowhow in developing countries. In addition, the importance of intellectual property rights especially Geographical Indication (GI) and Traditional Knowledge can help in poverty alleviation

2.2 Theoretical framework

This research adopted the intellectual property rights (IPRs) in endogenous growth theory supported by the "Regime theory".

2.3 The link between an effective Intellectual Property regime and Economic Growth

Intellectual Property is a growth enhancing factor for the global economy. An Intellectual property Right (IPR) regime that is effective can influence growth in the domestic and external sector of an economy, most importantly the technological transfer and its positive spillovers. Intellectual Property therefore exert economic growth which requires increase in productivity and increase in productivity requires increase in technological innovation that requires the efficient protection of intellectual property rights Rapp and Rozek (1990). Intellectual property protection can influence economic growth on average more effectively in an open economy compared to close economy Gould and Gruben (1996). An effective intellectual property licensing regime plays an important role in economic growth by attracting Foreign Direct Investment (FDI) that gives access to the technological and managerial assets of foreign multinational enterprises. Studies have shown that the relationship between intellectual property rights (IPRs) and foreign direct investment FDI) have diverse nature in developing countries.

Mansfield and Lee (1996) and Seyoum (1996) argued that a country IPR system of protection and development level influences the volume and composition of investment. According to Yang and Maskus (1998) FDI and licensing are important forms of technological transfer. Helpman (1993), Kondo (1995), and You and Katayama (2005) found that there is no clear link between stronger patent rights and FDI. Javorcik (2005) however indicated that the extent of IPR protection in a host country affects the composition of FDI, i.e. weak IPR regime divert FDI projects from manufacturing to distribution, because setting up a production plant is more costly than setting up distribution chain. Krueger (1978) in addition claimed that trade liberalization has potential to move forward specialization in sectors that have economies of scale by contributing to improving the efficiency and productivity in the long-run. The link

between trade and economic growth has received a lot of concern in both theoretical and empirical writing five decades ago. One of the best ways of estimating international trade depends on the close or openness of an economy. Trade openness is therefore a basic indicator of international trade. Although an investigation by Gozgor and Can (2016) found that nations that are effectively engaged with international trade have more advantages than those that less participate.

The theory of comparative advantage pointed out that, if a country wishes to trade with another country, they produce goods in which they have comparative advantage; although, other economists have further extended this theory. Like Krueger (1978) contended, trade liberalization in sectors that have economies of scale contribute by improving the effectiveness and productivity in the long-run.

In the same vein, economists like Schumpeter (1912) had in his analysis related market concentration and innovation (Patent rights) owing to the fact that they regularly empower the foundation of monopolies. He therefore argued that an imperative aspect of patents and related intellectual property rely on rivalry or antitrust policies. Furthermore, Intellectual property works cannot be finished without insinuating conventional economic rationale set forth by Arrow (1962) in regards to the protection of IPRs.

Coe and Helpman (1995), Grossman and Helpman (1991), and Romer (1994) argued that endogenous growth models highlighted positive relationships between international trade through trade openness and economic growth vis-à-vis the international diffusion of advanced technologies. They emphasized in their study that countries that extend receptiveness tend to appreciate innovations produced in cutting-edge economies that drives them to develop better than their partners with a lower level of transparency. Furthermore, Edwards (1993) raised contention that Imitation expense is a basic factor

that similarly matters in the economic growth link. Baldwin et al. (2003), Rodriguez and Rodrik (2000) opine that there is a positive connection between international trade and economic growth. In Uganda, Isaac and Ibrahim (2019) researched the impact of international trade streams on economic growth and their investigation revealed that there is strong positive connection among exports and economic development Gries and Redlin (2012) conducted a study on 16 Sub-Saharan African nations and found that economic growth causes international trade by means of openness in Ethiopia, Gabon, Kenya, Mauritius, Senegal, Sierra Leone, and Togo, though, a feedback causal relationship subsists for Cameroon, Côte d'Ivoire, Nigeria and Rwanda. While, on the contrary, no causal relationship exists between trade and growth for Burundi, Ghana, Madagascar, South Africa, and the Gambia. In view of the above, a study by Vlastou (2010) finds that international trade indirectly affects economic growth. Furthermore, the outcomes set up a causal relationship running from international trade to growth was similarly settled.

This study was trailed by that of Polat et al. (2015) who likewise locate that international trade by means of transparency blocks economic growth in South Africa. More recently, studies by Brueckner and Lederman (2015) investigated this relationship; however, the results depict that trade fosters growth both in the short and long run. In Nigeria, authors like Babatunde (2017) investigated trade-growth nexus. The result revealed that trade impacts on economic growth, both positive and negatively in the economy while studies by Lawal and Kamtochukwu (2017) and Muhammad and Benedict (2014) show that there is a long-run relationship among the variables of interest. Hwang et al. (2016), conducted a study that revealed the economic effects of IPRs protection differ from one country to another based on the level of economic development. In affirmative with the

above mentioned, Grossman and Helpman (1991) in their study emphasized in their results of an ineffective IPRs protection regime on technical progress (technology) through economic growth by imitation which in turn dis-incentivizes innovation. Reinforcing the aforementioned, Betul (2020) indicated that the rewards from an effective intellectual property regime encourage creations, innovations and research and development (R&D). Therefore, stressing that the link through which IPR protection passes translates into growth through innovation knowing pretty well that innovation is pivotal to economic growth of any country. Suggesting that the means by which IPR protects innovation defines the extent of economic growth realization. Furthermore, in a study by Falvey et al. (2004) shows a positive and significant relationship between IPR and growth. Also, a study by Gould and Gruben (1996) finds that IPR has a significant positive impact on growth. The study suggested further that IPR records more significant effect on growth in open economies than closed economies.

Thompson and Rushing (1999) however examine this relationship between IPR and growth using technology as a ratio of growth of real GDP per capita over Total factor productivity (TFP) and found that IPR showed a positive impact on TFP in countries that are relatively rich and ultimately has positive impacts on growth. (Filippetti & Archibugi, 2015; Awokuse & Yin, 2010) argued that developing countries benefit more from a higher inflow of technology transfer than developed countries.

They however noted that better innovation stems from enhanced technologies which can be achieved by diverse means such as involvement in international trade, domestic innovation, FDI through the transfer of technologies, Licensing, investment, piracy and or imitation. Moreover, Falvey et al. (2004) examined and found that IPR and development link is sure and critical.

Gould and Gruben (1996) similarly found in their study that IPR has a critical positive effect on growth. The study further suggested that IPR show a more significant impact on development in open economies than closed economies. Thompson and Rushing (1999) examine this relationship by estimating innovation as a proportion of development of GDP per capita over Total factor profitability (TFP), noted that IPR positively affects TFP in nations that are generally rich which therefore impact particularly on yield development. Hence, developing nations will appreciate more benefit from higher inflow of innovation than developed nations (Filippetti&Archibugi, 2015; Awokuse & Yin, 2010). Flores and Perez (2019) investigated factors that stimulate innovation activity in Latin America. Their results show that there is a positive and significant relationship between variables.

Yang and Maskus (2009) shows that stronger IPRs in developing economies would enhance technology transfer through licensing there by reducing the incremental cost of firms, hence, making them more competitive on international markets. A number of researches have within their literature focused on the link between IPRs and international trade across different countries. For instance, Fink and Primo Braga (1999) establish a negative yet significant relationship between IPRs and international trade particularly in technology related products such as telecommunications, machinery, and electrical facilities.

Plasmans and Tan (2004) also establish the link between a weak IPR regime and a strong or powerful imitation ability in China as barriers to foreign export in china. The results surprisingly revealed that substantial patent rights enhance foreign exports to China in high – technology and patent-sensitive industries. However, a rigorous IPRs protection regime has a weak impact on low technology and trademark-sensitive

industries on condition that China has strong ability of imitation. Similarly, Canh et al. (2019) explored the impact of economic openness and institutional quality on patents. Their results incredibly found that, although institutional quality appears as an important driver for patent applications, FDI flows and trade openness have absolutely different impacts, particularly, higher inward FDI flows have a positive result on patents while trade openness may have a negative result on patents. Willoughby and Mullina (2019) reinforce and establish that exploitation of endogenous technology is a significant factor for national economic development. Betul (2020) revealed that the result of foreign trade on innovation in BRICS-T countries (Brazil, Russel, India, China and South Africa) showed that the variables are co-integrated within the long-run; exports exhibit a positive impact on innovation while inputs and FDI adversely affected innovation. Ferrantino (1993) investigated the link between IPRs and trade by examining the configuration of exports in relation to national membership in IPR treaties exploiting U.S. aggregates. Surprisingly, their results found a weak link. In contrast Maskus and Penubarti (1995) investigated this link between the variables by measuring IPRs in conjunction with bilateral trade on an industry level. They found a vigorous direct relationship between manufacturing exports of OECD countries and also the strength of patent rights in large and small developing countries.

The above outcome confirms the study by Smith (1999) within the U.S. Following a different line of argument, Shin et al. (2016) established that IPRs could support export barriers to trade. They revealed strongly by evidence that recent IPRs reforms have accelerated international trade; nevertheless, they need not help encourage exports of developing countries. Beyond the aforementioned, a study conducted by PWC (2020) examined the impact of intellectual property (IP) infringement on businesses and the

Nigerian economy. The study established that prejudicial infringement is detrimental to the country's economic growth and development (prospects) in many ways that lead to the inability of the country to realize its full economic potential. Based on the above theoretical and empirical review of the literature, they found no clear-cut picture regarding the relationship between IPRs, trade, and economic development, respectively. In the same vain, the study found no specific theoretical model that past studies used to determine how strong IPRs and trade affect economic development.

2.4 Intellectual Property, Foreign Direct Investment and economic development

Intellectual Property and Foreign Direct Investment are key to economic development (Katainen, 2017; Nenova, 2018). This is based on theories that see intellectual property and foreign direct investment as catalysts in an economy for creating positive spillover (Idris, 2003 pp. 45-44; Denisia, 2010, p.53). Furthermore, intellectual property and foreign direct investment work in synergy to facilitate the presence of each other (Idris, 2003, pp. 38-42). Empirically, studies however show the ambiguous effects of intellectual property on economic development (Hanafy, 2015; Hudson &Minea, 2013, pp.73-74).

The state of economic development can be traced from the post-world war II era with focus on modernization, decolonization, and national economic growth. This vision of economic development is at the core of the Bretton Woods Initiatives, United Nations, the World Bank and the WTO, therefore putting into perspective the global economy and the modern development agenda (Chon, 2006, pp. 2861-2863). Economic growth is therefore perceived as an important element of economic development (Schwartz, 2013, p222). Driven by productive improvements, production of more goods and services by the utilization of the same amount of labor, materials and capital thereby stimulating

economic growth (Almfraji&Almsafir, 2014, p. 207). Economic growth and economic development are however perceived as the same when they are not. Economic growth without development is therefore possible (Feldman et al, 2016, pp. 9-10; Nafziger 2006, pp. 15-16). Hence, what is classified as economic development? Sen (1999), Feldman et al. (2016, pp. 7-8) and Nafziger 2006 pp. 15-16) believe that economic development is the creation and strengthening of the necessary capacities for economic actors to operate to change the economy. Thus, economic development considers systematic Improvement in the level of poverty, hunger, life expectancy, literacy. Unemployment. Environmental protection, inequality, along with economic growth (Feldman et al., 2016, pp. 7-8; Nafziger, 2006, pp. 15-16), simply put, economic development benefits the overall and creates wealth for society. To however translate changes in economic development into is not straightforward. Whereas economic growth can be measured through changes in output (GDP) (Nafziger, 2006, pp. 20–44; Stiglitz et al., 2018). In a nutshell, there are multiple factors that can interplay into shaping economic development. Hence, there have been theoretical arguments for the promotion of intellectual property and foreign direct investment due to the fact that they both contribute to economic development. Both Intellectual property and foreign direct investment are well seen as conduits for achieving economic development. However, intellectual property and foreign direct investment can successfully contribute to economic development when IP and FDI policies are properly set up.

2.5 Intellectual Property and Economic Development

Economically speaking, the primary purpose of intellectual property is in two dimensions. On the one hand, Intellectual Property gives exclusive rights to incentivize creation, invention, innovation and other related intangible goods. On the other hand,

Intellectual Property disseminates knowledge of the innovated knowledge and intangible values. Though these two might sound contradictory, an effective structure of an intellectual property policy is therefore necessary for a satisfactory trade-off that will result in an optimal level of both (Maskus, 2000, p. 474). Setting up an effective IP regime accordingly, can positively affect a broad spectrum of economic activity that can subsequently lead to economic development. The legal and economic mechanisms are demonstrated in several ways. For instance, IP is an integral factor of innovation, an activity that essentially contributes to economic development (WIPO, 2015). Intellectual Property can serve as a catalyst to create or open new, often foreign markets (Maskus, 2000, p. 480). Intellectual property also drives technology transfer which is widely recognized to be a major contributor to economic development (Park &Lippoldt, 2014, pp. 74-76). Furthermore, intellectual property and its protection is an important factor in attracting FDI (Awokuse& Yin, 2010, p.223). Even though intellectual property can contribute to economic development, there are many factors that need to be considered. Intellectual Property does not function in isolation, it depends on external socioeconomic factors for an effective contribution (Mercurio, 2010, p. 68).

Moreover, putting the IP system at a glance, there seems to be correlation between the desire and actual IP protection, compliance and enforcement on the one hand and economic development on the other hand. Hence, the choice of IP policy can yield both negative and positive implications on a country's economic development depending on the country's level of development. Over the years, economically and technologically speaking studies have shown that an effective and strong IP policy with high IP protection, due compliance and consistent enforcement contribute to economic development.

2.6 International Intellectual Property Law and economic development

International intellectual property law found that economic theories on the relationship between IP and economic development have to some extent constituted legal sources. International Intellectual property treaties have recognized IP as a driver of economic development. The WIPO Development Agenda is one clear example (Lerner2008). The WIPO Development Agenda is a set of implementing guidelines for legislating intellectual properties at the same time considering WIPO members states development concerns. The TRIPS (The overarching IP treaty in the world) agreement also considered intellectual property and economic development. The objectives and purpose of TRIPS reference clearly economic development as set out in articles 7 and 8 (Slade, 2016, pp.954-955). The articles argued that intellectual property should contribute to welfare and that legislating in the area of IP should consider the socioeconomic development of member states. Indirectly, the connection between economic development and IP rules appears in the preferential trade agreement. The preamble of the preferential trade agreement reference economic development which is used subsequently to interpret the agreement including the IP potion. Even though the reference of economic development exist in international IP law, their impact at the national level has been doubtful considering the experiences of some developing economies (Gervais, 2013, p. 102)

2.7 Foreign Direct Investment (FDI) and Economic Development

Policy makers perceived FDI as a desirable economic variable that record economic gains in the investment-receiving economy. Traditionally, FDI record positive spillover by stimulating the flow of new technology and technical know-how, create link between domestic and foreign firms, increase employment and provide direct capital financing,

thus contributing to economic development (Alfaro & Chauvin, 2016, pp. 2-3) furthermore, economic theory point to the fact that capital movement from capital-abundant countries to capital-desiring countries, thereby contributing to economic development where it is most needed (Bonnitcha et al. , 2017, pp. 34-37). It is therefore logical to create the enabling economic environment and a legal system that will attract FDI. In the same vain to intellectual property, the effect of FDI on economic development depends on a number of factors. Hence, the countries in need of capital imports need to be well positioned and capable of reaping economic spillover benefits. For instance, FDI can contribute positively to economic development of a country provided the levels of human capital are adequately high, similarly, in cases to the contrary, a country can have negative effects (Borensztein et al., 1998, p. 134). Although FDI impact depends on the structure of FDI (Mecinger, 2003, p. 500) and also the FDI's economic sector of entry (Hanafy, 2015). The effect of FDI depends on a multitude of parameters in the receiving country. For-instance, the level of Haman capacity, sophistication of the private sector, trade policy, competition policy and investment policy (Pohi, 2018, p. 15).

2.8 The relationship between Intellectual Property (IP) and Foreign Direct Investment (FDI)

Intellectual Property and Foreign Direct Investment are linked in a number of ways. In view of the Conceptual framework, one of the functions of IP is to protect the investment in intangible value. Economically, foreign investors are most likely to invest in countries that adequately protect intellectual property (Tanaka &Iwaisako, 2014, p. 119).on the reverse, countries that do not offer adequate protection for intellectual

property may deter foreign investors, especially in the IP intensive industries (Maskus, 1998, p. 132).

Strong protection of intellectual property safeguards intangible assets and ensure that they are not easily copied or imitated. An effective Intellectual property protection system gives investors the confidence that they can successfully compete with the domestic market operators, the receiving country becomes more desirable for investment and investors are more willing to set up a production plant instead of importing products (Maskus, 1998, p. 148). When foreign investors' IPs are adequately protected, they are likely to conduct merger and acquisition activities (Alimov& Officer, 2017, p. 374). Moreover, technology transfer is facilitated by means of IP and can serve as a medium of importation of capital in the form of new technologies and know-how by foreign investors (park &Lippoldt, 2014). The aforementioned are all associated with economic growth and development. They therefore potentially justified the assumption of positive causal relationship between intellectual property and FDI on the one hand and economic development on the other.

2.9 Intellectual Property and Growth

According to (Hargreaves, 2011) in an independent report, in modern days countries survive on their creative ability. Growth doesn't come from the competing cost of labor, raw materials or access to capital, our competitive advantage depends on our ability to innovate. Intellectual property rights should therefore support growth by promoting innovation and creativity by granting a temporary monopoly to creators or inventors. However, such rights are capable of stalling growth where high transaction costs are or rights are fragmented such that they are difficult to access. Thus, policy makers should carefully access the costs and benefits by evidence and accepted economic theories.

2.10 Why IP matters to growth

The most important driver to long-term economic growth is improved productivity, this has been widely accepted. Most of the productive growth and job creation has come from innovation, mainly from SMEs, innovation therefore creates and grows new markets. Furthermore in a highly competitive market, justified strong reason for innovation and creation to capture new value as competition is the strongest incentive for innovation. For-instance, where innovation is difficult to copy or there are large rewards for being the owner of an IP product, competition to incentivize innovation becomes effective. To simply put, Intellectual property right protection is cardinal to growth. Intellectual property rights protection therefore incentivizes innovation by giving a time limit on return on innovative investment. Thus the risks of inventing and creating new products are reduced and therefore stimulate innovation, competition and stronger economic growth. This also creates a condition where the full technical working of a patented invention is shared. This encourages the IPR system to make follow-up on innovation as information on technology is made available to the public for use by people skilled in the area to build on. Many literatures have argued that IPRs protection in developing countries can be viewed from a developed countries. While from less developed countries perspective, where developing countries are the losers as far as strengthening IPRs regime is concern. This is largely because globally tightening IPRs systems will make developed countries' innovators more powerful at the expense of their counterparts in less developed countries, and this power will give the firms situated in developed countries the freehand to arbitrarily increase prices to maximize profit (Cannady, 2004; Saint-Paul, 2008; Qiu& Lai, 2004; Borota, 2009; Primo Braga et al., 2000; and Hossain, &Lasker, 2010). Grossman & Edwin (2004) and Borota (2012) also

support the argument that when the IPRs system is tightened in developing countries, developed countries benefit more. Grossman & Edwin's argument is predicated on the assumption that innovation takes place in developed countries while imitation takes place in developing countries. They considered a global economy with ongoing innovation in two countries; one a developed country and the other a developing country. The countries are assumed to have different market sizes, varying innovative capacity, and differ in their absolute and comparative advantage in manufacturing. The findings by Borota (2012) reveal that under free trade the quality lag of the developing country is positive even in the absence of IPRs protection. This is largely attributed to the comparative advantage the developing country has in lower quality goods production and trade. However, it was discovered that stronger IPRS protection lowers the welfare of the developing country and negatively impacts economic growth. The results also showed that stronger IPRs protection would increase welfare in the developed up to a certain point.Falvey, Foster & Greenaway (2006) examined the impact of IPRs protection on economic growth using a panel data of 80 developed and developing countries over the periods 1975-1994. They argued that IPRs system has varying effect on economic growth depending on country specific characteristics. They suggested that IPRs protection is positively and significantly related to economic growth for low-income and high-income countries but not for middle-income countries. They suggested that IPRs protection promotes innovation in high-income countries, and encourages technology or FDI inflow into low-income countries but that low-income countries suffer losses as a result of reduction in the gains they would have enjoyed from imitation. Falvey, Foster & Greenaway (2006) in their research concluded that the relationship between IPRs protection and economic growth is ambiguous. This is so as

IPRs protection on one hand could encourage growth by promoting innovation (increase in innovation could lead to increase in economic growth see Rosenberg, 2004) and research, while on the other hand it could lead to monopolistic tendencies and drastically reduce the role of imitation and technology diffusion. And these are important economic growth agents in developing economies especially the ones that embark on little or no innovation at all. They therefore, suggested that IPRs protection will have different effect on different countries, with developed countries benefiting more from strong IPRs protection than developing countries. Horri&Iwaisako (2007) support the argument by Falvey, Foster & Greenaway. They argue that IPRs give patent owners monopoly for extended period of time. And this ends up creating a huge problem in the society as important sectors of the economy may be taken over by monopolies. And such companies may begin to lower the quality of their products and probably increase the price of their products in such ways that may adversely affect the overall interest of the public. Fink and Maskus (2005) further suggested that IPRs protection even when they are intended to encourage invention end up inhibiting it. Boldrin& Levine (2002) argued that having a strong IPRs system creates "intellectual monopoly" as Intellectual Property Rights Protection and Economic Growth.

David (2004), Krimsky (2003), Lessig, (2002) and Murray & Stern (2005) suggest that strengthening IPRs may stifle the diffusion of knowledge thereby inhibiting innovation. This they attributed to lack of adequate disclosure in patent applications, plethora of dormant patents and inhibition of copying. Schneider (2005) in the research using a panel data set of 47 developed and developing countries from 1970 to 1990 observed that IPRs protection affect the rate of innovation but the impact is more significant in more developed countries. In fact Pollock (2008) argues that significant amount of

innovation can still take place in the absence of intellectual property protection and that welfare may actually be higher than when intellectual property protection is present. Also Adams (2011) is of the view that strong IPRs protection has adverse impact on growth in developing countries especially Sub-Sahara African countries. Adams (2011) used a single equation to analyze the relationship between economic development and IPRs protection in 34 Sub-Saharan Africa countries using a panel data of four different time periods. In the equation Real GDP per capita was used as the dependent variable and IPRs and other variables are the independent variables. Three different estimation techniques were used. The reason was to obtain a more error free result that is both accurate and precise. For instance according to Adams the fixed effect model was used to control for any bias that may arise as a result of omitted variables and unobserved country heterogeneity. The results obtained indicate that strengthening IPRs has negative effect on economic growth, domestic investment is positively correlated with economic growth and finally human capital is an important factor in determining economic growth.

There are however, arguments that are in favor of the notion that strong IPRs protection will bring about tangible economic growth in developing countries. Saggi (2013) argue that developing countries and developed countries have varying technological needs. And that for the developed countries to keep investing and producing new technologies required by the developing countries, the developing countries must have reasonable protection of IPRs. Firms situated in developed countries in the absence of tight IPRs regime in the developing countries may decide to cut down their investment in research and development, make their products more difficult to imitate and at the end churn out less efficient technologies (Yang &Maskus, 2001). These actions will reduce the volume

of technology transfer to developing countries, a move that will invariably affect effective technology utilization, adoption and diffusion. This will further have adverse effect on the economic wellbeing of developing countries. Chen &Puttitanun (2005) are of the view that aside from the pressure from developed countries, developing countries may want to strengthen their IPRs systems to boost local economic growth. This argument is predicated on the assumption that some domestic innovation will only come about as a result of strong IPRs systems. They therefore, argue that it is imperative that a country establishes IPRs system that balances the ability of a nation to imitate technologies from advanced countries and at the same time provide necessary incentives for local innovation (Chen & Puttitanun, 2005).

Branstetter & Saggi (2009) recognize intellectual property rights as critical to the support and investment in research and development, which leads to innovation and invariably economic growth. By granting investors temporary exclusive rights on their inventions they are able to price their products above marginal cost and are therefore able to recoup their original investment cost after a period. Giving inventors exclusive rights to their inventions give them the needed incentives to invest in research and development thereby contributing to technological innovation and transfer, and diffusion of knowledge in such ways that are beneficial to social and economic welfare (Leger, 2006; Kanwar & Evenson, 2003; and Kanwar, (2006). Branstetter, Fisman, & Foley (2006) and Park (2008) suggest that strengthening IPRs will bring about increased inflow of foreign direct investment and technology transfer into developing countries, which in turn will spur domestic innovation. Some literatures such as Lerner (2002) suggest that developing countries provide weak IPRs because they have few innovations to protect and would rather prefer to benefit from imitations. Whereas developed

countries provide strong IPRs protection because they have more innovations to protect. Falvey& Foster (2009) asserts that IPRs protection tends to be of more significance in open economies than in closed economies. Lerner (2002) and Hall (2007) suggest that there is a possibility that tight IPRs protection is peculiar to more technologically advanced countries and that this explains why Maskus (2000a) and later Chen &Puttitanun (2005) obtained U-shaped relationship between IPR protection strength and GDP per capita (the proxy for economic growth). Kanwar&Evenson (2003) working with data obtained for 32 countries between the periods 1981 and 1990 discovered that strengthening IPRs protection has significant positive impact on research and development investment. They then went ahead to infer that having strong IPRs would promote innovation and technological advancement, which will in turn have a positive bearing on economic growth. However, when they analyzed the data obtained from 307 Japanese firms during the period 1980 to 1994, they found out that the expansion of the Japanese patent scope have very limited or no impact on the research and development effort by Japanese firms. And the results also revealed that the expansion had very little or no effect on innovative output. Kanwar (2006) argue that having a strong IPRs system is capable of bringing about greater innovation in developing countries, which in turn will bring about greater economic development. This position was reached from the findings obtained after considering the relationship between research and development investment and index of patent rights. Kanwar (2006) also noted that innovations that are suitable in a developed country might not be suitable in a developing country.

Sattar& Mahmood (2011) in their study considered the impact of IPRs on economic growth using a panel data comprising of 38 countries (11 high income countries, 16 middle income countries and 11 low income countries) analyzed over the period 1975-

2005. The Ginarte and Park index (see detailed explanation of the index below) was used as measure of the degree of IPRs protection and per capita GDP was used a measure of economic growth. Sattas& Mahmood (2011) suggest that economic growth (represented by GDP per capita) depends on the following variables; the initial level of per capita GDP, inflation, intellectual property rights, population growth rate, trade openness and rate of investment. The empirical result obtained reveals that IPRs protection has a significant impact on economic growth. The impact was however found to be more significant in high-income countries relative to middle and low-income countries. And it was further discovered that the impact of IPRs protection was even more significant in upper middle-income countries when compared to lower middle-income countries and low-income countries. The uniqueness of this study is that it measures the impact of IPRs protection on economic growth for different income levels.

Studies by Kanwar&Evenson (2003) and Park (2003) suggest that strong economic growth could give rise to strong patent protection. And some other studies as mentioned above suggest that countries strengthen their IPRs protection in order to encourage economic development. This reverse causation hypothesis, that is economic growth giving rise to strong patent protection, is further emphasized by empirical studies such as Maskus (2000a), Primo Braga et al., (2000) and Chen &Puttitanun (2005) which revealed a U-shaped relationship between patent regime and GDP per capita (economic growth). Chen &Puttitanun (2005) suggest that there is an empirical U-shaped curve relationship between IPRs and per capita GDP in developing countries. This view was earlier established by Maskus (2000a) and Primo Braga et al. (2000) but Chen &Puttitanun (2005) went further to establish a theoretical explanation for such a relationship. In fact Maskus (2000a) is of the view that the notion that wealthier

countries are more prone to tighten their IPRs regime is well established but the contention is whether tightening IPRs protection really promotes growth. He eventually concludes that there is indeed a U-shape relationship between patent strength and economic growth. He argues that as income level increases patent protection (IPRs protection strength) is lowered. It reaches a certain optimal point after which patents protection begin to rise again as it is tightened intentionally through government policies. Optimal IPRs regime is one that takes into consideration the level of economic development and technological ability of a country. It balances the trade-off between encouraging local imitation of advanced technologies from developed countries and providing the necessary incentives for domestic innovation (Chen &Puttitanum, 2005). Kanwar&Evenson (2003), among others in their literature concluded that strengthening IPRs have significant positive effect on innovation and growth, whereas Sakakibra&Branstetter (2001) concluded otherwise.

Jackson (2013) asserts that a robust reward system is capable of promoting innovation. Having a reward system that is predicated on a robust IPRs framework will cause entrepreneurs to develop new products or processes in such ways that they become more useful to the community. With such reward system entrepreneurs will be willing to invest the necessary resources (money and time) to achieve their objectives. But such a reward system should not be at the expense of the rest of the public. In other words the IPRs regime should seek to reward the inventor and at the same time benefit the wider public. All these should be done in a way that will create a positive impact on the overall economic development of the country. So for a country that is at the early stages of its development, it will be better off putting in place strategies and policies that encourage technology adoption, such that will enhance imitation of advanced technologies. This

should include having a robust education system that will produce the right human capital, establish policies that will ensure seamless linkage between universities, research institutions and industries and also establish policies that will promote firm-level innovation. It is very important to state that for a country to properly learn and imitate technologies from advanced countries it must build the relevant human capacities to develop, absorb and utilize such technologies. The country should have workforce that has the ability to effectively learn from and adapt existing technologies to forms that are beneficial to its local needs. These kinds of skills can be acquired through the right education and by encouraging local companies to engage in focused research and development programs. There should be strong linkages between research institutes, universities and industries. Such ties will ensure that research institutes embark on research projects that are commercially, economically and socially relevant. To strengthen this sort of ties there should be well-defined framework on how the accrued benefits will be shared between the research institutes and the enterprises in a manner that is mutually beneficial. And lastly financial institutions should be encouraged to invest in research and development (Maskus, 2000a). However, as the country climbs up the technology advancement ladder it can then gradually refine and modify the above strategies and policies to encourage more advanced innovation. At this time the country can then begin to further tighten its IPRs protection. Acemoglu, Aghion & Zilibotti (2006) corroborate this view.

As is seen above there have been several researches with respect to the impact of IPRs protection on economic growth in both developed and developing countries. Recent among these efforts especially for developing countries are the works by Adams (2011) and Chen & Puttitanun (2005). Adams (2011) focused more on the impact of IPRs on

economic growth in 34 Sub-Sahara African countries. The degree of IPRs protection was proxied using the Ginarte and park index. The panel data consists only of four separate time periods: 1985-1989; 1990-1994; 1995-1999; and 2000-2003. Adams used three different estimation techniques; ordinary least square, seemingly unrelated regressions, and fixed effects regression model. The work by Chen & Puttitanun (2005) considered the impact of IPRs protection on innovation and also on economic development using a panel data of 64 developing countries. The level of IPRs protection for each country was determined using Ginarte and Park index as was also the case in Adams (2011). The panel data was collected over six separate time periods; 1975, 1980, 1985, 1990, 1995 and 2000. The empirical model used was two simultaneous equations, the first representing IPRs protection and the other represents domestic innovation. The equation was analyzed using the ordinary least square model. On the other hand this paper is an extension and improvement on previous researches on the impact of IPRs protection on economic development especially the work done by Adams (2011) and Chen & Puttitanun (2005). This research covers a broader range of developing countries other than Sub-Sahara Africa countries and more than the 64 developing countries used by Chen & Puttitanun (2005). It actually used a panel data of 81 developing countries. It also collected and analyzed data over eight separate time periods; 1975, 1980, 1985, 1990, 1995, 2000, 2005 and 2010. Most importantly unlike the previous researches it used a better IPRs index, one that did not only take into consideration IPRs laws as is the case with the Ginarte and Park index but also the degree of enforcement of IPRs laws. This was achieved by combing the Ginarte and Park index and the Fraser index (Hu &Png, 2010). The Index of Patent Rights put together by Ginarte & Park (1997) and later updated by Park (2005) is made up of five key components.

2.11 Utility Model and its Necessity

In the quest for many developing countries to promote and encourage innovation, which invariably spurs economic growth, they adopt the use of petty patents or utility models. Utility model is an inexpensive alternative to the traditional patent system. Utility model system offers low cost no examination protection regime for technical inventions, which would ordinarily fall short of the regular patentability criteria (Suthersanen & Dutfield, 2005). Among all countries that practice the utility model, certain features and attributes as regards utility models are common. Utility models in all the countries confer exclusivity rights to the owner. Novelty is a general criterion for the grant of utility model right although the standard of novelty may vary from one country to another. And lastly it is required that utility models get registered even though substantive examination of the application is not practiced (Suthersanen & Dutfield, 2005).

The desirability of utility model varies from one industry to another. While some industries will welcome with open hands affordable, fast protection system others may be skeptical that such system will rather destroy "creative imitation". One may argue that some inventions are better off left in the public domain and open to imitation. To understand the real advantage of utility model and economic relevance in a country it will be recommended that it be compared against the behavior of the firms in an innovative environment. Hansen & Birkinshaw (2007) recognize the importance of firms been able to efficiently convert ideas into viable products and services. In some jurisdictions the issue of having or not having a utility patent system has been subjected to serious debate. For example, in Singapore opponents of utility model argued that there was little or no need both from a legal and economic perspective to establish a utility model system. Industry wise, it was believed that a large domain is necessary to spur

innovations. However, the proponents argued that the cost of getting an IP protection is too high and that it also takes too long and that the present IP system as structured is rather too complex. The opponents suggested that these concerns can be taken care of not necessarily by establishing a new IP system but by reviewing the existing system and restructuring it such that takes into consideration the expressed concerns (Suthersanen & Dutfield, 2005). At the long-run both parties agreed that if the industry feels it is better having a utility model system in place, then such a system should have the following features: The renewal tenure should not exceed 20 years; first period of registration should not attract any examination; the renewal fees should be different for SMEs and large enterprises; applications for second time renewal should be subjected to examinations;

novelty should be universal; utility model right holders should have the choice of filing for standard patent applications; and government should take coordinated actions to promote and instill a culture of utility model. Innovation is a process that begins with an invention and the eventual transformation of the invention into a new and marketable product, process or service (Popadiuk & Choo, 2006). For firms to commercialize their inventions effectively in an innovative market environment they have to take certain factors into consideration. They need to properly understand what the market demand is. It may therefore, be more strategic to concentrate more on design and market driven commercialization as against technology-enabled commercialization. Design and market driven commercialization are more tailored to suite the desires and aspirations of the market. It can be argued that countries introduce utility model primarily because of design and market driven commercialization, as most inventions are mainly incremental in nature. And furthermore, they are susceptible to imitation when released in the open

market (Suthersanen & Dutfield, 2005). It is generally believed that utility model is very important for the growth of small and medium scale enterprises. This is based on the argument that SMEs have prevalent presence in industries that witness plethora of incremental inventions. Such industries are also known to be plagued with unfair copying (Suthersanen & Dutfield, 2005). It is therefore, believed that utility model will help sanitize such industries and provide the required legal environment for SMEs to thrive, in terms of having the confidence to embark on incremental innovation knowing that their inventions will be adequately protected. A nation should consider its present patent regime and see the impact such regime has on SMEs. It should then analyze the situation and figure out the impact having a utility model system will have on SMEs. The assessment should aim to determine the volume of incremental and fresh innovations that come from SMEs. The patent system should be such that is in consonance with the needs of SMEs in terms of the type of innovations been churned out by SMEs. It may be possible that having a utility model will promote innovation among SMEs, which will invariably bring about growth in the economy. One may assert that industries within which SMEs thrive are quite susceptible to high level of copying. It therefore implies that providing a robust utility model framework will not only promote innovation among SMEs, but also create a positive impact on the economy. Furthermore, the regular patent regime may be too expensive for SMEs. The utility model system will provide them a more cost effective solution for the protection of their inventions, even though the inventions are only incremental. In as much as the utility model system may seem very good, it is not without some challenges that should not just be over looked. Since the utility model regime entails the lowering of the standards when compared to traditional patent standards it could lead to a huge number of legal

uncertainties and invariably lots of litigations. Furthermore, bigger firms may decide to rather apply for utility model instead of filing for standard patents as a means of side stepping the more stringent conditions present in the standard patent system. These bigger firms may end up abusing the system and making it more difficult for SMEs to compete. One of the major snags with utility model is the fact that rights are granted without proper examination, which invariably could lead to legal uncertainty and plethora of litigations. This is largely because it will be more difficult for third parties when carrying out infringement searches to determine the rights that exist in a given technological field. This may not only bring out so many infringement cases but will act as barrier to other competitors. The danger of having the utility model system further extends to undermining the rights and privileges of existing IPRs owners. The argument for the award of utility model rights is predicated on the assumption that cumulative innovations are very prone to unfair copying and abuse by third parties. However, granting utility model right may very well undermine the real essence for the award of traditional patent rights.

Traditionally the reality is that all inventions and creative works are in the public domain except works that fulfill certain criteria such as novelty, inventive step, originality or distinctiveness. So by allowing utility model system, it implies granting right to inventions that fail to satisfy standard requirements. The importance of this is that many inventions that are sub-standard may be granted rights. This may end up having adverse effect on existing IPRs. The system may further kill copying drastically, which in turn may not be the best for economic growth. Copying and free riding is sometimes perceived to be healthy for competition and invariably economic growth (Gimenez, 2011).

Generally speaking having a reasonable intellectual property regime is necessary to protect innovative ideas and give creators of such ideas incentives to keep creating. However, any idea that does not meet the full requirements including such traditional standards, as novelty, inventive step and originality are not granted any protection. Ideas that do not meet these traditional standards fall within public domain and can therefore be freely copied and shared. But in a situation where these ideas that do not meet these standard criteria are granted protection they will not only deny the public free access to these ideas but the integrity of already existing IPRs including the benefits accruable to the owners are jeopardized. Copying and free sharing of ideas is known to be beneficial to economic growth and promotion of healthy competition among businesses (Gimenez, 2011). However, utility model protection can be justified on grounds that intellectual property protection is not meant to only grant protection for inventive ideas but also to allow reasonable products, services and methods to be developed that are essential to the public. Such inventions require capital investments and for such inventions to keep coming the organization or individual who invested in the research and development of such products, services or new methods should be given the necessary cover to recoup their investments. They need to know that even though these inventions will eventually get imitated that there will be reasonable time between when the idea is conceptualized (and commercialized) and when it will become freely available in the public domain. With these protection and understanding organizations and individuals will feel more comfortable to invest in industrial research development and innovation.

Policy makers are therefore, faced with the option of not encouraging sub-patentable regimes and simply leaving them unprotected, instead of lowering the inventive step threshold. They may alternatively decide to put in place a legal system that can give

some level of protection to such inventions such as statue-based tort (Suthernanen&Dutfield, 2005). Under such conditions anyone who feels he has suffered loss can sue the infringer for trespass. In summary, the utility model system can bring about possible increase in litigation; firms may be tempted to redirect funds that could have been put to other use to gain utility model protection. The system may lead to an overall increase in royalty and licensing fees to foreign companies. Due to potential increase and monopoly in the volume of patent and utility model protection certain industrial areas may suffer adversely as competitors may be shut out. On the other hand utility model system can be advantageous to a country that is a net importer of intellectual property goods as utility model protection may encourage local businesses to be more creative and produce more goods which in turn will reduce the overall import. The utility model system will provide a platform for the protection of certain intellectual property goods, which do not meet the standard intellectual property goods protection under the standard system. This action will further discourage firms from freely imitating other people's ideas and will cause them to rather invest in research and development and thereby bringing an increase in the volume of intellectual property goods produced in the society. The utility model system will also help to generate revenue for the government through registration. It is recommended that in implementing or adopting an utility model system that a nation should not adopt a one-size-fit all approach for all industries. Two critical questions should be answered in determining the appropriate utility model solution for an industry. These include: ascertaining if copying is a problem in the industry and secondly if it is better for the inventions in that industry to be left in the public domain and be open for free imitation. Recent literature on economic growth, technological progress is viewed as the prime

determinant of long-run growth. This technological progress arises from the activities of economic agents carried out in order to profit from the introduction of new products (Romer, 1990; Grossman and Helpman, 1991, Ch. 3) or the improvement of existing ones (Grossman and Helpman, 1991, Ch. 4; Aghion and Howitt, 1992). Agents invest in R&D in the expectation of profiting from the resulting inventions. Besides creating new products, innovative activity adds to society's stock of knowledge, upon which subsequent innovations are based. This process is assisted where the information that IPRs protect is made available to other potential inventors as in patent claims. The global rate of growth then depends upon the rate of innovation and the stock of knowledge, and IPR protection can increase growth by encouraging both. When it comes to exploring these issues in a multi-jurisdiction context, the most relevant analyses are those that examine a world composed of two types of countries: a developed, innovating "North" and a developing, imitating "South". The main concerns have been whether increased IPR protection in the South would increase (i) the rate of (global) growth, (ii) the rate of technology transfer from the North to the South, and, (iii) welfare levels in both locations. A straightforward partial equilibrium analysis reveals that while the North always benefits from stronger IPR protection in the South, the South itself is found to benefit only when R&D is highly productive, such that the R&D induced by stronger IPR protection in the South results in significant cost reductions, and when the South comprises a large share of the overall market for the good (Chin and Grossman 1990). In these circumstances the additional monopoly profits available in the South provide a significant additional incentive for northern investment in R&D, and the welfare of the South increases due to the increased benefits in consumption resulting from northern R&D. But as Deardoff (1992) shows, the benefits of increased innovation

through stronger IPR protection become weaker as more and more countries strengthen their IPR regimes, since the extra market covered and the extra innovation that can be stimulated by such protection diminishes. Since IPR holders engage in monopoly pricing that distorts consumer choice, strengthening IPR protection can lead to welfare reductions, particularly in a country that undertakes little or no R&D and would otherwise be able to free ride on foreign innovations. Countering this is the notion that the North and the South may have different requirements and priorities when it comes to technology (Diwan and Rodrik, 1991). The South may then have an incentive to provide IPR protection in order to facilitate the invention of the particular technologies that meet its needs, which might otherwise be neglected. More recent work has considered dynamic general equilibrium models of innovation and growth. Several aspects are then shown as potentially important. One is the competition for scarce resources between R&D (investments in innovation) and the production of the new and improved goods that arise from the innovation. The channels through which technology can be transferred from one country to another then become significant. In the simplest case, where only goods are traded, successful southern imitation results in the competitive advantage for the production of imitated products shifting to the South. Stronger IPR protection in the South then decreases southern imitation and increases northern innovation in the short-run, as innovation becomes more profitable. As Helpman (1993) notes, in the long-run innovation in the North may fall, because if new products are produced for a longer time span in the North fewer resources are available for innovation there. Stronger IPR protection in the South may then reduce global growth. But weak IPR protection in the South may have effects besides reducing the incentive for innovation in the North. Northern exporters may be able to ‘mask’ their production

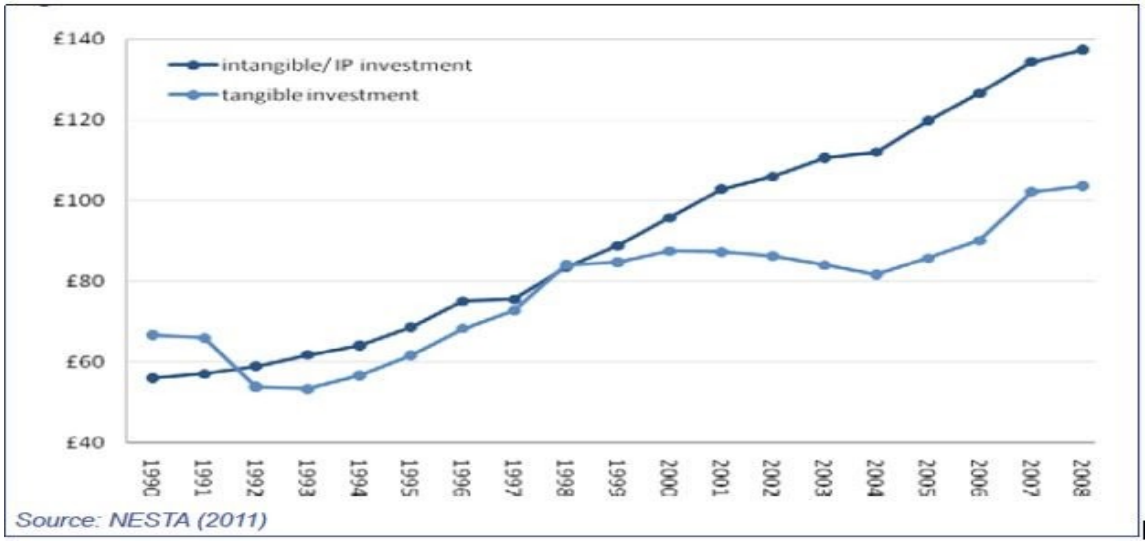
technologies, thereby limiting the extent to which it can be imitated through traded goods (Taylor 1993). The potential gains from technology transfer through weak IPR protection in the South might then be offset by increases in northern masking. Where FDI is an option, the resource competition effect noted by Helpman is moderated (Lai 1998). The innovator can now shift production of new goods to the South, reducing the competition for resources in the North. Stronger IPR protection in the South may increase the speed of foreign investment and the return to innovation further. The additional resources drawn into imitation in the South leave less available for production, causing FDI to contract. In response production is shifted back towards the North leavingfewer resources in the North available for innovation, which lowers the rate of innovation overall (Glass and Saggi, 2002). Extending the options further, the impact of stronger IPR protection in the South on incentives for firms in the North to innovate and to license advanced technologies to firms in the South has also been examined (Yang and Maskus 2001a).

2.12 Changes in investment of tangible goods to intangible good-Example of evidence of the UK Business Investment.

As investment in the knowledge economy intensifies in developed economies, intellectual property right protection becomes a greater concern. Firms have directed their spending to intellectual property related investment in the developed economies dominated by services. For-instance, in the UK, spend 137bn euros on intangible investment (IP related investment) compared to 104bn euros on fixed assets in 2008. The investment in intellectual property constitutes 13% of the market gross value added (GVA) with pretty close to half of the investment being directed to IPRs. The value of patents and the creative industry alone in global trade is more than 600bn euros yearly.

Which constitute over five per cent of all world trade and on the rise as depicted in the figure below:

Figure 1



2.13 The creative and innovation industry

SMEs play an important role in job creation from innovation. For example SMEs account for six per cent of firms in the UK with more than 10 employees and created 54 per cent of all new jobs since 2002. Meanwhile, bigger firms continue to play a crucial but changing role in innovation and partnering with smaller firms developing new technologies especially in the biotechnology and software industries. The relationship between SMEs and large firms can be symbiotic. They complement each other with direct support with innovative thinking and work together on research and development (R&D).

2.13 The effect of the digital world on Intellectual property

Due to the fact that fundamentally digital is an information and communication technology (ICT), digital technology might be the most important and transformative

technology of our time. Intellectual property rights therefore lie at the heart of digital technology. ICT has not been only the strongest driver of growth, it has pushed content and communication technology into new uses that means the intellectual property system is part of the daily lives of people. Thus, digital technology provides firms the opportunity to market their products nationally and internationally at a relatively low cost.

2.14 Relevance of the Theoretical Framework to the Study

The relevance of the theoretical framework is to give me broader ideas on the IP related theoretical framework on Intellectual property, growth and development from past study and the implications of implementing an effective IP regime in Liberia. The relevance of the theoretical framework is to also provide guidance for this study.

It also help to set the basis for this study, especially examining the relationship between intellectual property, growth and development in view of the implications of an effective intellectual property regime on production of goods and services in Liberia.

It provides the theoretical framework for the theory being used in this study as guidance to investigate the relationship between intellectual property growth and development from the implementation of an effective intellectual property regime on the production of goods and services in Liberia

2.15 Summary

The theoretical framework provides a broader idea from different spectrum of the theory used in this study and serves as conduit to investigate how intellectual property can be used as economic diversification to enhance growth and development from the implementation of an effective intellectual property regime on the production of good and services in Liberia.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter describes the approach used in analyzing the study data, the data type and sources. This chapter also contains data analysis and presentation of results. In this chapter, an analysis is conducted to provide finding on the possible impact of an effective intellectual property regime on the production of goods and services in Liberia.

3.2 The Research Design

This study is conducted to examine the possible impact of an effective intellectual property regime on the production of goods and services in Liberia using secondary data from credible and reliable online sources.

3.3 Population, Sampling and Sampling Technique

The study is conducted to analyze and provide insight on the possible impact of an effective intellectual property regime on the production of goods and services in Liberia using secondary data with experiences from least developed countries (LDCs) that have similar economic size and structure.

3.4 Data Collection Instruments and Procedures

This study primarily examines the relationship between an effective intellectual property regime on the production of goods and services in Liberia to enhance economic growth and development

3.5 Analysis and Organization of Data

The study employed secondary data from the world intellectual property organization (WIPO), world trade organization (WTO), the world intellectual property indicator, articles, journals, Google scholar and other credible intellectual property related sources. This study used secondary data and descriptive analysis. It also used tables, charts figures and graphs to analyze secondary qualitative data.

3.8 Ethical Consideration

This study used secondary qualitative data from credible online sources on examining the impact of an effective intellectual property regime on the production of good and services in Liberia. That will provide policy options for economic diversification to enhance growth and development in Liberia, learning from experiences of countries that have implemented an effective intellectual property regime.

3.7 Summary

This study investigated the possible macroeconomic impact of an effective intellectual property regime in Liberia using experiences from least developed countries (LDCs) that have similar economic size and structure using secondary data from credible and reliable source such as the world intellectual property organization (WIPO), world trade organization (WTO), the world intellectual property indicator, articles, journals, google scholar and other credible intellectual property related sources.

CHAPTER 4 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter describes the approach use in analyzing the study data. This chapter describes the data type and sources; chapter four also includes data presentation, analysis and interpretation. An analysis is conducted to provide insight of the possible impact of an effective intellectual property regime on the production of goods and services in Liberia. Their implications for the Liberian, lesson learned from the experiences of Nigeria, Ghana, Zimbabwe, South Africa and Zambia.

4.1.1 Sources, Quality and Response to data request

This research gathered secondary data from readable source and investigated the possible impact of an effective intellectual property regime in Liberia learning from other least developed countries experiences. The data collection process involved the rigorous online relevant materials research from credible and reliable online sources.

4.2 The Current Intellectual Property System in Liberia and Problems

Liberia Intellectual Property System (IPS) comprises copyright and industrial property offices. The following Ministries and Agencies play a regulatory role within the sector; the Ministry of Commerce & Industry (marketability), the Ministry of Justice (enforcement), the Ministry of Finance/ the Liberia Revenue Authority/ Customs (tax collection) and the Ministry of Labor (union protection/promotion). Formally, the copyright and industrial property offices were part of the Ministry of Foreign Affairs and were referred to as the Bureau of Copyrights and Trademarks Archive.

The copyright and Industrial Property Offices begin autonomous by an act of the National Legislature in 1997 and 2003 respectively. The Ministry of Commerce and Industry had oversight responsibilities of the two offices in the past. The Copyright and the Industrial Property offices were repealed by an act in 2016 establishing the Liberia Intellectual Property Office (LIPO).

The Intellectual Property System in Liberia has not been functional as evidenced by the enactment of the new Intellectual Property Law of Liberia that established the Liberia Intellectual Property Offices (LIPO) in 2016. The Intellectual Property System of Liberia is weak but yet has strong potential for IP goods.

The legal, regulatory as well as the enforceable regime lacks the necessary capacity. The Liberia Intellectual Property Office (LIPO) runs under the guidance of the Ministry of Commerce and Industry despite its autonomous status, due to its low technical and financial capacity to prosecute IPR infringers.

The Liberia Intellectual Property Office is running a system that does not have the capacity to monitor and track violators or fake IP goods. This may be attributed to the huge IP gap and low level of IP awareness. Hence there are huge piracy issues and unauthorized duplication of works. The high sale of counterfeited commodities can't be over emphasized.

Nevertheless, the passage of the new intellectual property act on 14th July 2014 that came into force 22nd July 2014 was a resounding yes to revamping the intellectual property system of Liberia. The enactment of the new Intellectual Property Law was to also facilitate the implementation of treaties and conventions Liberia is party to.

4.2.1 Some key elements of the new Liberia Intellectual Property Act

The Liberia Intellectual Property Office (LIPO) is divided into two separate offices- the Industrial property Office and the Copyright office. Under the Industrial property Office are the following:

4.2.2 Patent

The act maintained the criteria or requirement for patentability (Novelty, Inventive Step and Industrial applicability). Any applicant wishing to obtain a patent from the Liberia Intellectual Property Office is under obligation to make available foreign search report and rejection notice. The life of a patent is 20 years with an annual (annuities) fees payable

The act considered the various exceptions and limitations; discoveries, theories, methods of doing business, computer programs, method of treatment etc.

Novelty means the invention must meet the requirement for novelty and subject to a 12 months grace period.

Inventive step means the invention must meet the non-obvious requirement

4.2.3 Novelty means the invention must meet the requirement for novelty and subject to a 12 months grace period

Inventive step means the invention must meet the non-obvious requirement

4.2.4 Compulsory License

4.2.5 The act also recognizes compulsory licensing in certain cases as are follow:

- If it is in the public interest;
- In cases where the manner of exploitation is anti-competitive;
- In cases where the patent has not been exploited for four years from the date of filing; or
- In cases where the owner refuses to grant voluntary licenses on reasonable terms

4.2.6 Utility Models

The act equally applied all provision of patent to utility models. The only difference is the life of utility models which is 10 years.

4.2.7 Industrial Design

For a design to be registered it must be original, it meets the novelty requirement within a 12 months period. The act also considered the following exceptions and limitations:

- Private use of the design for non-commercial proposes
- The use of the design for teaching proposes
- Scientific research or experimental proposes etc.

4.2.8 Trade Marks

The act defines marks as visually perceptible and that marks may not consist of writing description. The life of a mark is 10 year while Well-known marks are protected specifically the use of Trademark of non-counterfeit goods that the packaging is not materially altered or damaged and registered trademark in relation to spare parts, the act recognize the above as limitations and exceptions of marks

4.2.9 Geographical Indications

The act specifically protects GI, a group of producer or competent authority can apply for GI, the application is advertised for opposition purposes.

The owner of GI can pray to the court for an injunction in the instance of unauthorized use of name that indicates a false geographical origin that may mislead the public.

4.2.10 Traditional Knowledge

The new 2016 Intellectual Property Act of Liberia recognizes an invention derived from biological material or Traditional Knowledge obtained within a community, that invention shall indicate the source of origin of that material and or knowledge.

4.2.11 Copyright and related right

The act grants protection to a wide range of works that include Literary and Artistic works, musical works, dramatic works, sound recordings and computer programs.

The exceptions and limitations are official texts, news of the day and political speeches. The following are rights granted to copyright owners:

- The right to reproduction
- The right to translation
- The right to adaptation
- The right to distribution
- The right to rent
- The right to public performance
- The right to broadcasting and other communications

4.2.12 Problems confronting the intellectual property regime in Liberia

Holding to the fact that there are low financial and technical capacities, there are challenges in implementation of the 2016 intellectual property act of Liberia. The system is unable to determine the huge number of infringers on intellectual property rights as evidenced by the low number of cases of piracy or infringement in court since the establishment of the new intellectual property offices and the enactment of the new intellectual property act. Hence, there has been a creation of a booming black market especially for musical works.

4.2.13 The need for an effective intellectual property regime in Liberia learning from the experiences Nigeria, Ghana, Zimbabwe, south Africa, Kenya and Zambia

Intellectual property has become a major source for economic development in many developing countries. In Sub-Saharan Africa, intellectual property is one of the main sources for economic growth and development, countries like Nigeria and Ghana, Zimbabwe, South Africa, Zambia and Kenya are invest in intellectual property development. From the experience of Nigeria through a study that was conducted, there

are low understanding of the Intellectual Property Rights protection and its possible impact on innovation and FDI inflow. Most people believe that tightening IPRs protection will encourage innovation and attract further FDI while other believe that fundamentally the first thing to do is to strengthens the economic base and gain some level of technological advancement before considering tightening the intellectual property rights regime. Hence, it is worth noting that even empirical studies conducted previously presented conflicting results on the impact of intellectual property rights protection on innovation and FDI inflow. For example, Kanwar & Evenson (2003) concluded in their literature that strengthening IPRs have significant positive effect on innovation and growth while Sakakibra & Branstetter (2001) concluded otherwise. Also, Kanwar (2006) argues that having a strong IPRs system is capable of bringing about greater innovation in developing countries, which he argues will in turn bring about greater economic development From these previous studies, one can generally conclude that that the effect of intellectual property rights protection varies depending on the rate of innovation and FDI inflow on the economic development, income level and technological advancement of the country. Even though conclusion from other studies have varying views on the exact point IPRs protection begin to have real positive effect on economic growth, they all however establish that the economic status of a country is a major determinant of the impact IPRs will have on a country's economic development, to name a few, political stability, ensuring economic freedom, building robust education system, and clear economic strategies. From the study conducted on Nigeria's IPRs regime, the findings show that IPRs protection has an interesting influence on the rate of innovation that can effectively take place in a developing country. If it is however too tight it will negatively affect the level of innovation that can possibly take place in a

developing country. Intellectual Property protection needs to be relaxed to adequately encourage innovation. Some researchers like Ginarte& Park (1997) and Lerner (2002) believe that developing countries provide weak IPRs because they have few innovations to protect and that they rather prefer to benefit from imitations. While developed countries provide strong IPRs protection because they have more innovations to protect. Whatever the case, developing countries are to embark effectively on innovation and move their economy to the next level and that they must adopt policies that will enable them to effectively learn from and take better advantage of technologies produced in advanced countries. Secondary data have however showed that IPRs protection has varying effect on FDI depending on the economic status of developing economies. IPRs protection in developing countries will not only necessarily promote domestic innovation but will also positively impact the inflow of FDI.

4.2.14Given the experiences of Nigeria and other LDCs, there is a need to encouraging a culture of domestic innovation in Liberia

For Liberia like other developing countries to promote innovation it must ensure the creating of a robust innovation culture. It must develop policies that will ensure the creation of knowledge and its proper diffusion, the availability of adequate funding for R&D, focus and restructure its education system and incentivize and encourage innovations at firm level. Liberia must furthermore consider the importance of establishing a national innovation system, including the conceptualization of a national innovation system for Liberia.

4.2.15Encouraging Free Flow of Knowledge

To encourage and improve domestic innovation, Liberia needs to ensure free flow of knowledge and promote incremental innovation. Liberia needs to ensure the free flow of knowledge through acquisition of foreign technologies in three difference ways:

- Imitation of foreign capital goods
- Foreign direct investment and
- Foreign technology licensing.

The government of Liberia needs to create the enabling environment that will promote the above mentioned ways of technology acquisition and puts into place the right FDI policies; sound foreign technology licensing regulations and guidelines; and establish and enforce IPRs regimes. Liberia will also need to invest in the development of the right kind of human capital necessary for the evaluation, selection, execution and modification of foreign technologies (Feinson, 2003).

It is imperative that Liberia import capital goods from developed countries to locally replicate the technologies to keep up with international technology trend. It is worth stating that this method of technology acquisition does not come with the requisite theoretical or practical knowledge on how to use and manipulate the technology. Liberia will just need the right human capital base to be able to adequately use and effectively adapt the technology, although there are challenges of imitating technologies. IPRs laws and the high cost of imitating certain technologies will stand in the way of Liberia freely imitating foreign technologies (Mansfield et al., 1981). This may discourage local firms from attempting to copy certain technologies. Liberia therefore needs to be cognizance of challenges in designing a sustainable national policy framework for attracting foreign technologies. For Liberia to adequately acquire technologies through FDI, it must put in

place policies that will attract FDI inflow. To encourage the establishment of FDI subsidiary or acquiring substantial shares of FDI inflow of firms in Liberia, the foreign firm will have to bring qualified labor, establish new plants, observe foreign regulations and develop new and domesticated marketing plans (Saggi, 2000).

This will enable the foreign firm to considerably implement the new technologies that will help Liberian work in foreign firms that will allow them gain lots of theoretical and practical knowledge that they may be able to implement the same technology and even improve on it. Liberia can also regulate the amount of foreign ownership in multinational firms. More local ownership will not only put more money in the hands of Liberia but also create more opportunities for spillovers of new technologies to local firms. Liberia will also acquire new technologies through foreign licensing, which basically is the leasing or licensing of foreign technologies to already existing local firms, giving them the right to use, sell and even reproduce a particular capital goods. The country can decide to put in place policies that can make foreign technology licensing more favorable to local firms, policies that give local firms the upper hand in a technology licensing agreement (Pack & Saggi, 1997). Liberia should ensure that FDI inflows go into critical sectors that will be most beneficial to the economy. This will help with the setting up the right frameworks that will enhance effective utilization of the FDI inflows. Liberia will need to improve business environments by providing key economic and social infrastructure such that it will lower the cost of doing business. Thus, to ensure lower leakages that may negatively impact the efficient and effective utilization of FDI. Knowledge flow in Liberia could also be promoted through technology utilization and diffusion. Having identified and acquired the right technologies government must put in place the right strategies that can help local firms

utilize and diffuse these technologies throughout the country. This can be achieved by establishing systems (institutions and networks) such that have the capacity to absorb and disseminate the core knowledge behind the new technologies. Government will have to put in place the right incentives and policies to help in the establishment of both formal and informal networks that promote capacity building, standards and regulation, information flow, quality control, testing and etc. This therefore highlights the extreme importance of utility models to a developing economy (Ranis, 1990). This is not negating the facts that engaging in formal and structured research and development program is wrong but as firms within the country attain a certain level of technological advancement and proficiency they can begin to engage in formal research and development activities. The point is focusing on formal research and development activities and tightening IPRs protection from the onset may discourage firms from taking full advantage of already existing technologies. The above strategies will not be effective without the right human capital. Mytelka et al. (2001) amongst other have clearly demonstrated that the absorption capacity, which is the degree of technology diffusion, is heavily dependent on the level of education and training of a people. Dahlman& Nelson (1995) noted that for proper and sustainable technology diffusion to occur a robust human capital base must be present, such that is able to assess and decide on what technology is appropriate, for who and when that technology should be acquired and how it should be implemented. These they opined can be handled with a well-developed educational system. They further asserted that there are two critical levels at which investment in human capital must be directed, and these are the university level and the primary/secondary level. Dahlman& Nelson (1995) asserted that the university system is capable of churning out a workforce competent enough to monitor technology

trends, assess how relevant the trends are to the current needs of the country and the firms within the country. Such a workforce can also help in developing the right strategies to take full advantage of these technology trends. The primary/secondary level on the other hand is critical in the sense that it creates the needed platform that will aid the quick diffusion and adoption of new technologies, help in ensuring local adaptation and improvement of these technologies and in general help to create greater awareness of these technology trends while also ensuring that the country takes full advantage of the technology (Dahlman & Nelson, 1995). For Liberia to ensure effective diffusion and adaptation of new technologies it must strive to put in place the right human capital base. And this can be achieved by ensuring that it revamps its educational system such that is geared towards building requisite skills. Lots of energies and efforts need to be put in the creation of the right educational environment in universities that will encourage innovation and attract the right talents into research and innovation in the universities and research institutes, Liberia may need to consider developing educational programs or projects like the "One North" project developed by Singapore that helped to create an environment that is conducive and supportive of innovation (tan, 2005). Dahlin (2005), Heckman & Klenow (1997) and Michaelowa (2000) perceive investment in education as very important to societies both at the micro-level and at the macro-level. They noted that the direct effect can be seen in the increase in individual wage and furthermore increasing externalities can also be a resultant effect even though it may be an indirect effect. As mentioned earlier education can equip individuals with the requisite skills, knowledge and competence that will enable them be more useful to the overall development of a nation. The level of investment in the education sector in Liberia has consistently remained poor this may be attributed to the impact of the

prolonged civil war. This invariably has led to decrease in industrial capacity utilization, caused steady increase in unemployment, caused structural imbalance in the society and brought about social insecurity and rise in the level of poverty (Borishade, 2001).For Liberia to solve its social and economic problems it must take education seriously and commit the right amount of needed resources into education, put in place the right policies that will help take the education sector to a much higher level. To have a sound innovation system that can contribute significantly to economic growth it must have people with the right skills that can be attained by consciously designing an educational system that takes into consideration the present industrial deficiencies and also take into consideration the developmental direction the country desires to attain.

4.2.16 Learning from other countries and developing the Right Policies

Economic development of any nation is largely depending on the national innovation system that provides the platform for knowledge, invention and innovation to take place. This creates the environment for businesses, universities and government to co-exist positively. Thus, the core to any successful national innovation system is driven by the level of R&D that takes place within the system. R&D can be undertaken by businesses, universities and government in a given national innovation system. A least Developed Country like Liberia needs to choose the right strategy to derive the maximum possible amount of R&D efficiency and this will entail choosing the right mix of R&D between government, business and university. As part of the strategy to utilize national innovation system for economic development Liberia can learn from countries that have managed to develop a successful strategy.

4.2.17 Encouraging Firm to engage in Innovation

The Government of Liberia needs to put in place microeconomic policies that will encourage firm to engage in innovation. OECD countries have managed to subsidize R&D (Greenhalgh & Rogers, 2010). They have therefore created a culture of competition amongst OECD countries on who will be the preferred R&D destination for foreign firms. Some countries have also adopted strategies such as providing grants for R&D and providing financing for certain types of research. Between 1971 and 2008 the volume of patents granted in the US grew from 81,790 to 182,901 (Greenhalgh & Rogers, 2010) as subsidies have been discovered to provide the right incentive for private firms to innovate. Similarly the European Patent Office recorded about three times increase in the number of patent grants between 1985 and 2005 (Hall, 2007). The US after the 1980 also recorded significant increase in the number of patent grants. For the US many commentators argued that the increase was as a result of the legal and policy changes that took place in the US patent system. The US Supreme Court gradually extended the coverage of patent protection starting from the 1980s to include biotechnology, software, business methods and scientific research methods (Hall, 2007).Nadiri (2003) noted that the social rates of returns of R&D may range between 20 percent to over 100 percent depending on the industry. Encouraging R&D at the firm level will ensure that firms keep producing goods and services that are beneficial to the general society. Providing tax incentives for domestic firms may strongly be considered in Liberia as OECD (2002) even shows that 18 of its members use some form of tax incentives to encourage R&D. Providing tax incentives have shown significant increase in R&D. Hall & Van Reenan (2002) in their work revealed that there is a $1 increase in R&D for every $1 of tax relief. Two main types of R&D tax incentives were deployed by some of the OECD member states. One was the 'level' tax incentive and the other

was referred to as the 'incremental' tax incentive. This "level" of tax incentive entails providing tax relief on the total amount spent on R&D (some countries however put a limit to the amount of tax relief they are willing to provide). The "incremental" approach provides tax relief on increase on R&D over a defined base figure (Greenhalgh & Rogers, 2010). Each of the above mentioned options has merits and demerits. Countries may choose the option that is more suitable to them and this may include combining both approaches. Liberia may decide to choose any of these options. It may also choose to combine both options or totally adopt a new strategy that will consider the dynamics of the business environment in Liberia.

4.2.18The need for a National Innovation System

The importance of quality tertiary institutions and research institutes cannot be overemphasized, the government of Liberia needs to provide the necessary foundation for the development of science and technology to promote the process of innovation. Policy Makers in Liberia need to recognize the immense role business enterprises can play in the promotion of innovation. This cannot be possible without the support from tertiary institutions, research institutes and the government. Thus, linkages between research institutes, tertiary institutions, government and industries are of key importance. For instance, the government or a firm should be able to sponsor research projects in specific research centers or universities. The outcomes are used by business to enhance its products and services, especially when the research is directly sponsored by the business. Ultimately consumer will over time have access to cheaper and better quality product. Countries must strive to encourage individuals and firms to invest and continue to invest in research and development and must have an in depth understanding of how intellectual property rights protection system works. The IPRs protection system is a key

portion of what is often referred to as the national innovation system (NIS). A sound innovation system is of key important to a nation's plans to have the right policies that will maximize innovation and ultimately create wealth. Liberia needs to put into place the right mechanism that will establish a lasting and sustainable national innovation system. A national innovation system (NIS) basically consists of three sectors namely industry (including financial institutions, agro-chemical, steel, fashion, entertainment etcetera), tertiary institutions (universities, poly-techniques, research institutions etcetera) and the government (at all levels including; federal, regional, state, local) interacting with one another. Each of these sectors has constant interaction with the other sectors while at the same time performing their own unique and separate function (Goto, 2000). The innovation system takes into consideration the nation's current technological development vis-à-vis where it intends to be in the medium and long term. It includes policies that will help transform the nation without jeopardizing its sovereign integrity, current economic position, the wellbeing of the citizens and firms in a country. Economists and policy makers perceived NIS as a tool for assessing and understanding the main factors responsible for the different economic advancement between developing and developed nations and a tool that can bridge the gap between developed and least developed countries in terms of developing a conceptual framework that can help in the establishment of the right policies and requisite institutions (Feinson, 2003). As pointed out by Niosi et al., (1993) the interaction or relationship between the main components of NIS may be technical, commercial, legal, social and financial as long as the ultimate goal of the interaction is to develop, protect, finance or regulate new science and technology initiatives. Lundvall (2000) noted that within a society one would always find continuous process of learning, searching, and exploring which together give rise to

new products, new technologies, new forms of organization and even new markets. He further stated that innovation is a gradual and cumulative process rather than a stage. Mytelka (2001) also noted that this process is non-linear but rather involves a complex and continuous interaction between suppliers, clients, universities, research institutes, regulatory bodies, banks, insurance companies and other stakeholders within a community. It is a huge eco-system that is social and at the same time dynamic (Lundvall, 2000). It is social as a result of the nature of the institution involved. And it is dynamic by reason of the linkages and interaction between the members of the NIS eco-system. Interaction between the actors in a well position innovation system is complex and non-linear. A robust policy that can spur innovation should not be one that is based on "technology push" concept with the aim of strengthening science and engineering education in the universities neither should it be one that merely seeks to generate "demand pull" for local scientific and technological research (Mytelka, 2001). Policies should rather be geared towards establishing local capacity to acquire, absorb and disseminate modern technologies. These policies should take into consideration the peculiarities of Liberia. In developed economies such as the United States, United Kingdom, France and Germany the innovation system simply serve to maintain or improve an already established economic growth system, while a typical developing country like Liberia is only aiming to at least, first "catch up" with the developed economies. For developing economies like Liberia to catch up with the developed economies they must follow a holistic approach in IPRs management and perceive innovation as a critical tool if they are achieve a sustainable economic development.

4.2.19Putting a National Innovation System into context

Developed economies are historically technology leaders while developing countries are technology followers. What is keen to developing economies is to successfully close the technological gap between then and developed nations. This can only be achieved by importing existing technologies and building the requisite capacity domestically to learn and improve on the existing technology (Feinson, 2003). Viotti (2001) described learning as it applies to developing countries as the process of technical change within a country achieved by diffusion and incremental innovation. Simply put, learning can be said to be the absorption of already existing technologies produced elsewhere and the subsequent improvement on that technology and further adapting it to the local environment. Liberia like other less developed countries will have to allow existing technologies from developed economies like the US, France, UK and Germany to fully diffuse into the system (full absorption of technology) and then creating further improvement on the technology in such a manner that it begins to solve problems.

4.2.20Developing National Boundaries for NIS

Liberia like other less developing nations be cognizance and not to be trapped by the fact that the entire country's social, economic, political and cultural activities can be included within the boundaries of the NIS. One may therefore, ask what then should be included? (Edquist, 2001). The Liberia should begin by defining the functional boundaries of NIS from the real functions of creating, disseminating and using innovation. Different researchers have expressed their views as to what they consider as the core functions of the NIS. For example Johnson and Jacobsson (2000) listed five key functions needed in a technological system as listed below:

1. Establishment and diffusion of new knowledge

2. Provision of duration for the search process both to users and suppliers of technology. This entails helping them to understand the growth potential of a given technology

3. Ensure availability of requisite capital and adequate competence

4. Ensure that positive external economies are created and inspired by both market and non-market factors

Rickne (2000) developed a more extensive list which like the one by Johnson and Jacobssonn (2000) also contained active creation and absorption of knowledge, environment for knowledge diffusion and active learning, guaranty of market for new innovations. Liu and White (2001) however, developed a somewhat different framework for the functional boundaries of an NIS, these include:

1. Research and development;

2. Implementation (manufacturing);

3. End-user (customers of the product or process output);

4. Linkages (bringing together complementary knowledge) and

5. Education

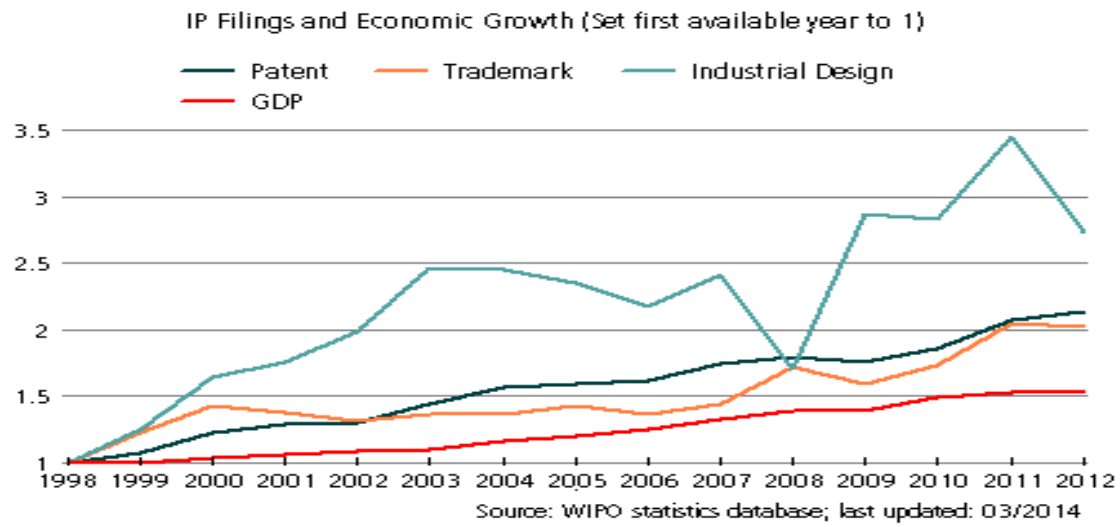
4.2.21 Example of Brazil, Russia, India, China, and South Africa (BRICS) countries experiences as visible in the IP trend analysis of the member country graph

4.2.21.1Brazil

For more than a decade Brazil has recorded tremendous economic growth and has attracted more foreign and domestic investors than it was able to prior achieve. This can be attributed to a more stable political system, better financial system and more tolerable

legal system. All these have helped to build a more reliable and trustworthy relationship between the Government and the business community (Advocacia Pietro Ariboni, 2010).

Figure 2: IP Filings and Economic Growth in Brazil



According to data from the WIPO website Brazil reported a strong relationship between the number of patents filed and economic growth. The increase in the number patent filling does not necessarily imply that it is attributed directly to the recorded economic growth of Brazil as there may be other factors causing it to record such an impressive economic growth. It is also possible that the economic growth in Brazil may be responsible for the rise in the number of patent applications. For instance the economist (2012) reported that there is a decrease in the volume of imitation (especially for software and music piracy) in Brazil as income rises. Therefore suggesting economic growth may spur more interest in creativity and innovation.

4.2.21.2Russian Federation

Russia recorded significant economic growth that considerably raised the standard of living in Russia and narrowed the income gap between it and other emerging economies (Beck, Kamps & Mileva, 2007). The income gap between the poor and the very rich is however very wide in Russia, and perhaps has one of the highest wealth inequalities in the world (Weiss, 2013). The growth and relative stability including rating upgrade in Russia has contributed to attracting FDI and generally helped boost investors' confidence. This growth in Russia's economy is largely attributable to the fact that among other factors Russia is the second largest producer of oil and it also has large natural gas reserves (Beck, Kamps & Mileva, 2007).

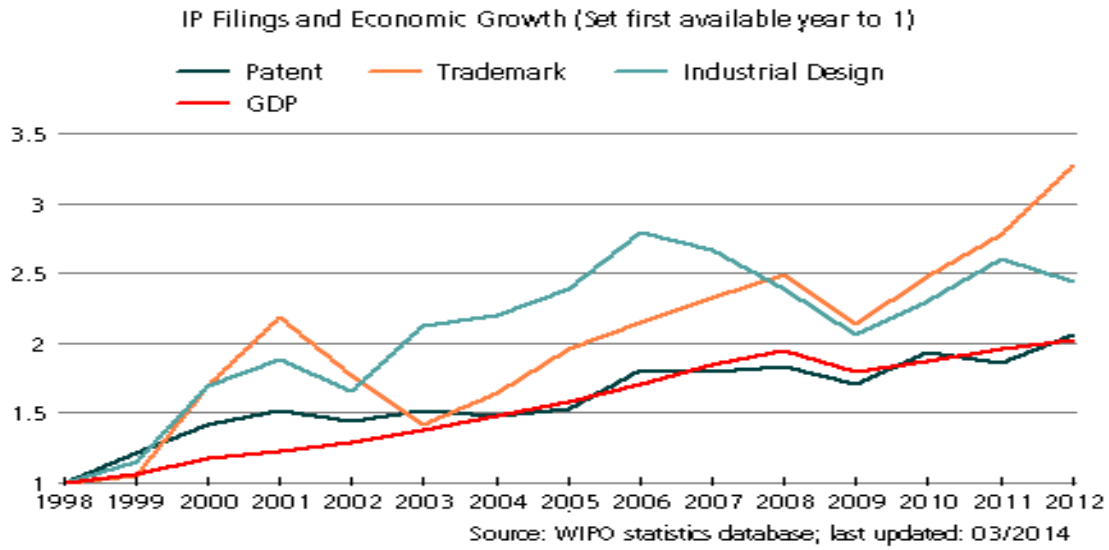


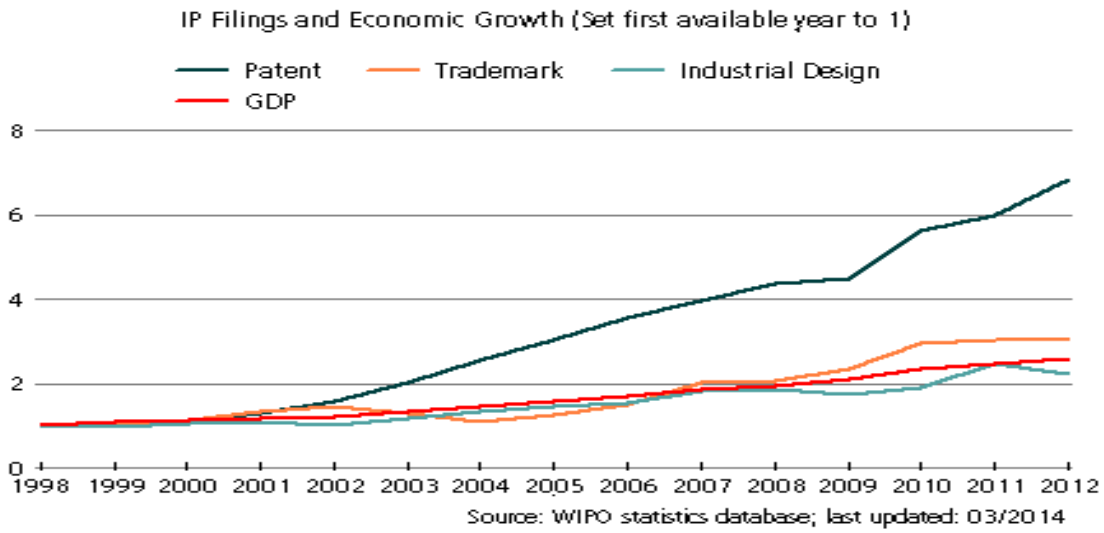
Figure 3: IP Filings and Economic Growth for Russia

The data from the WIPO website showed a very strong positive correlation between economic growth characterized by GDP and the number of total patents filed domestically and abroad. This consistent rise in economic growth may not necessarily be only as a result of the rising level of innovation in Russia but also other factors including innovation may be responsible.

4.2.21.3India

India is one of the fastest and largest growing economies in the world yet one of the poorest countries owing essentially to its very large population. India has recorded some tremendous results in the area of high technology but a good percentage of its citizens still use traditional methods in important areas such as farming (most Indian farmers are still small scale farmers). India's growth is largely characterized by the service and manufacturing sectors.

Figure 4: IP Filings and Economic Growth for India

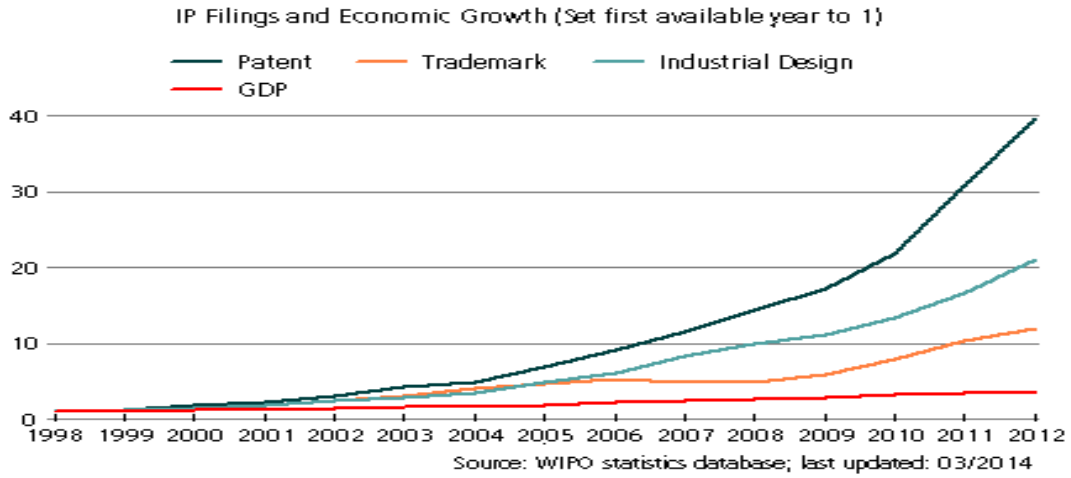


From the statistical data obtained from WIPO website, it seems to be a steady rise in the total number of patents filed domestically and abroad, there was also a steady growth in the economy. This may have incentivize the appetite for more original and genuine products, thereby encouraging individuals and companies alike to invest more in creating innovative products.

4.2.21.4China

China began to develop its intellectual property system for the sole purpose to legitimize its trade system, integrate itself into the global trade market and attract investments from abroad (Yu, 2002). The slow pace in developing its intellectual property system initially can be attributed to its Confucian beliefs and lack of formally established legal systems especially during the Imperial period (Yu, 2002). China's first substantive national patent law was established in 1912; it was very weak and offered very minimal protection to both domestic and foreign patent holders. Over the years China kept amending its intellectual property system to conform to global standards. After China opened its doors to the world in 1979 as far as business is concern it has come to realize the importance of intellectual property rights. It joined the World Intellectual Property Organization (WIPO) in 1980 and in 1985 it became a member of the Paris convention for the protection of Industrial Property Rights. In 1994 it became a member of Patent Corporation Treaty (PCT) and in 2001 it ratified the agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS). China in 1984 put in place its own domestic patent law for granting patents for inventions, utility models and designs. Zhang (2010) discovered that the recent surge in patenting in China is as a result of the revision of the Chinese Patent Law in 2000, increase in foreign direct investment in China and increase in the China research and development expenditure.

Figure 5: IP Filings and Economic Growth for China



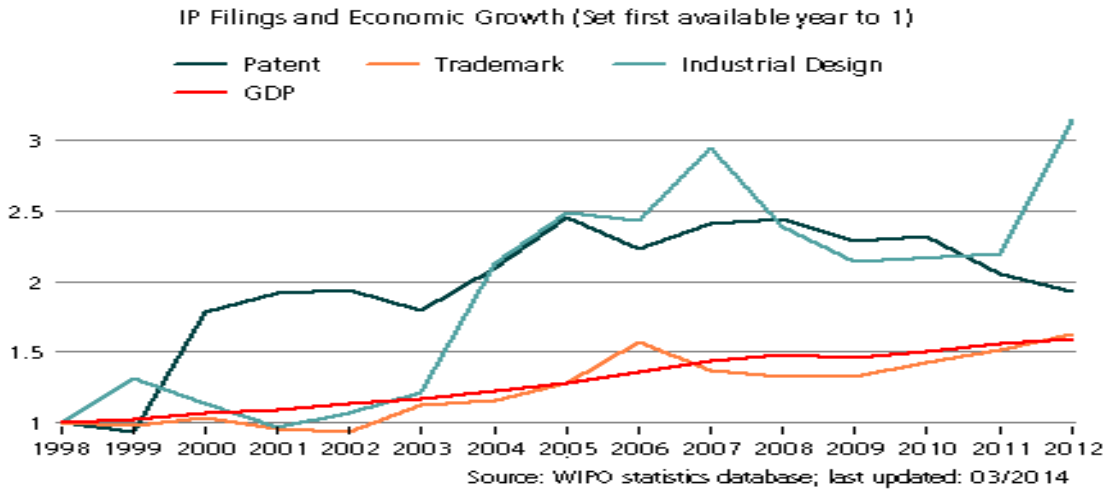
According to WIPO statistical data provided, China recorded a huge rise in the number of patents filed locally and abroad (including regional offices) between 1998 and 2012. The rate of increase in the number of patents filings during this period was more than the rate of increase in GDP. In essence the rate of increase in the rate of innovation in China during the period does not correspond proportionately to the rate of economic growth experienced by China within the same period, looking at the slope of the two curves. The argument that economic growth may spur innovation could still hold but the evidence is not very strong in this case implying that some other factors including improvement in the patent system may have contributed to the spike in in the rate of innovation. Other factors may include reforms in the education system and sound government policies including the encouragement of interaction between universities (research institutes) and industries (Chang & Shih, 2004).

4.2.21.5South Africa

South Africa suffered many years of apartheid but in 1994 the country transitioned into a more stable and all-inclusive political country through a multi-racial democratic election (Mattes, 2002). That election was won by the Africa National Congress (ANC), which has maintained leadership of the country since that first election till today. According to the World Bank, consistency, financial prudence and favorable global environment enabled South Africa to achieve steady growth in its GDP for a decade until the global financial crisis of 2008-2009. Efficient financial management has helped the country to reduce its debt to GDP ratio from 50 percent in 1994/95 to 40 percent in 2013. South Africa has achieved good success in its revenue collection drive with more than 100 percent increase in the number of taxpayers between the periods 1996-2007. This was largely caused by external factors and the persistent labor strife. Most of the country's

major sub-sectors suffered a decline in growth during the period with the exception of the agriculture and construction sectors. The rate of unemployment still remains high. South Africa has a relatively advanced IPRs system with strong legislative provisions. The South African IPRs system was established and contained in the Patents, Design, Trade Marks and Copyrights Act No. 9 of 1916 (Pechacek, 2012).

Figure 6: IP Filings and Economic Growth for South Africa



According to WIPO statistical report on South Africa, it has maintained a fairly unstable record in the total number of patent filings domestically and abroad. As indicated in the above graph, there was a declined between 1998 and 1999, rose sharply afterwards in 2000 and has since been fluctuating between 2009 and 2012. GDP however grew steadily between the periods 1998-2012, respective the fluctuations in the number of patents applications filed. Hence, one can infer that the country's economic growth may not be necessarily attributed to IPRs protection. The country may have achieved steady growth in its economy due to other factors as earlier mentioned including prudent financial discipline.

CHAPTER 5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the research findings, the implications of the research, the conclusions, the recommendations and suggestions for future research.

5.2 Summary

The aim and objectives of this research were to learn lesson from other developing countries experiences by reviewing relevant literature and analysing secondary qualitative data on the impact of an effective intellectual property regime from others developing economies like Liberia. Liberia lacks an effective intellectual property regime and what policy measures the government of Liberia can therefore put into place to address the IPRs challenges, given the experiences of other developing nations like Liberia that will provided significant and relevant new knowledge on an effective IP regime and its potential benefits for economic development in Liberia.The literature was reviewed to set the theoretical and conceptual framework of the research within the context developing an effective IP regime that will spur economic development through innovation and R&D as policy intervention to solve IPRs challenges. The research defined and justified the protection of intellectual property based on key economic and IP theories.

5.3 Conclusion

Several studies have shown that an effective IPR regime has positive impact on economic growth in both developed and developing countries. It is worth noting that in the implementation of IPRs strategy developing countries must keep in mind that there is no one-size-fit-all approach, as countries have their own unique economic, social and technological status. Thus, it is imperative that developing countries like Liberia understand the real issues of IPRs protection and its impact on economic development. This should be in consideration of the level of the country's technological advancement, the peculiarity of its business environment and the nature of the developmental policies it seeks to pursue. It is also worth noting that instituting a strong IPRs regime alone cannot contribute to development. To experience a positive IPRs system, it must work in connection with other variables such as market openness, robust competition policy, and good manpower development strategy. Hence, for Liberia to effectively take advantage of the potential benefits of IPRs protection it must first put in place the right policy and institutional framework that will help boost its economic and technological status. For Liberia like other developing countries to achieve an effective IP regime, it must put into place a robust IPRs policy that will encourage domestic innovation that will complement its IPRs laws with other strategic measures. It may complement these IPRs laws with measures such as establishing pro-competition IPRs standards, ensuring that the market environment is competitive, developing complementary competition policies and developing internal capacity to create, absorb and use IPRs. Developing internal capacity will mean having a good education system that will enable it learn from and adequately adapt new technologies to local needs.

5.4Implications

The implications from the experiences learned for developing economies like Liberia is to encourage innovation and invest in R&D through government policies and strategies given the uniqueness of their difference economic status that will spur economic development.

5.5Recommendation

5.1.1How Liberia can benefit from IPRs protection

It is imperative to note that a strong IPRs regime alone cannot chance the economic status of a country. IPRs regime can only be effective when it is designed in such a way that considered the level of technological advancement of a country. For IPRs system to have a positive effect, it must considered other variables such as market openness, robust competition policy, and good capacity development strategy and also ensure the establishment of a pro-competition IPRs values, that the market environment is competitive, create complementary competition policies and develop internal capacity to create, absorb and use IPRs.

5.1.2Develop a Pro-competitive IPRs Strategy

Liberia is a small economy in West Africa that need to put in place strategies and policy framework that will promote human capacity development such it citizens will be able to carry out incremental innovation on prior inventions. This will ensure local capacity development for the effective absorption and utilization of technological advancement. Furthermore, this will endure local capacity to embark on incremental invention around existing inventions. Liberia could also expand its protection under the fair use principles

for research and educational purposes. Liberia-as part of it strategy would permit reverse engineering of computer software programs with the aim of encouraging local software development. In essence while the country will prohibit outright copying of protected software programs, it will allow local developers to use selected components of protected software programs (Maskus, 2000a).

5.1.3How to Build Local Capacities to develop, absorb and use IPRs

To maximize the benefit from IPRs, a country must largely depends on its ability to build the relevant human capacities to develop, absorb and utilize IPRs. The country should have the ability to effectively adapt existing technologies will be beneficiary to the local Industries by having workforce with the right skills. These kinds of skills can be acquired through the right education; consciously ensuring that certain selected skills are acquired (Coe, et al., 1995). Furthermore, local companies should be encouraged to engage in focused research and development programs (Dougherty, 1997). There should be strong linkages between research institutes including universities and industry. Such ties will ensure that research institutes embark on research projects that are commercially, economically and socially viable. To strengthen this sort of ties there should be well-defined framework on how the accrued benefits will be shared between the research institutes and the enterprises in a manner that is mutually beneficial. And lastly financial institutions should be educated and brought on board to invest in research and development (Maskus, 2000a).

5.1.4Ensuring that the market is competitive

The gain from IPRs cannot be overly emphasized and are realized in countries with competitive market environments that promotes lesser risk of infringements. Such that as countries strengthen their IPRs system it is also necessary to fully liberalize their market. Open up their market to international trade and investment, relax existing restrictions against service providers and deregulate the local market to further promote competition. Economies with more open market structure are likely to experience growth from strong IPRs system than a closed economy. It is known that IPRs gives more power to the custodian of the right and such power can easily be abused in a closed economy than in an economy that is open to foreign trade (Harris, 1984 and Rodirck, 1988). Maskus (2000c) maintains that it is indeed counterproductive to strengthen the IPRs system and at the same time run a closed market. For example, if the market is closed, a patent will be too powerful as there will be no or limited substitute products which in turn reduces consumer choices. Compare to an open market where the consumers will have alternatives. However, such opening of the market should one that is not unfair to existing local enterprises.

Having an open market and strong IPRs system will encourage inflow of new technologies and FDI. With the right strategies as earlier mentioned above local companies can learn and adapt the new technologies that are more beneficial to the economy.

5.1.5 Develop Complementary Competition Policies

Intellectual property rights provide substantial protection to the right holders and those right holders could put privileges to use in ways that are abusive and probably anti-competitive. It is therefore, critical that a country reviews the possible areas that could lead to abuse and put in place measures to check such abuse.

For example, monopoly is an area of potential abuse, especially in a closed market. Another instance could be through horizontal licensing, where two or more firms license technology products among themselves and use the medium to fix prices. That is competing firms come together to embark on patent pooling and cross-licensing agreements between themselves with the aim of reducing competition and depriving other downstream companies that need the technology as key inputs for their products and services. Under such arrangements the licensee and licensor will take advantage of the system and fix prices and generally manipulate the market.

IPRs owners may choose to embark on anti-competitive activity using licensing agreements to prevent other firms from competing in a given market by raising the barrier to entry. A licensor could insist that licensees are tied to selling only their products. The licensee is tied to the licensor and even to future technologies. This could end up giving licensees dominant position in a secondary market and prevent other firms from entry especially if the licensor entered the market at a very early stage. It is imperative therefore that governments of developing countries establish policies that will check abuse of licensing agreement. These policies should take into consideration the peculiarities of the market including the market structures, thirdly IPRs owners should not be allowed to acquire other firms that own IPRs if such an acquisition will result in anti-competitive behavior. If the market anti-competition activities are not put to checked firms can acquire competing technologies and products with the purpose of stopping their commercial use or simply to be in control and manipulate the price of the technology. If it is perceived that two firms with competing technologies intend to go into a merger and that such merger will give the resulting company dominant position in the market, such merger should not be allowed to take place. Furthermore, IPRs owners

should not be allowed to take advantage of opposition proceedings and intimidate other firms. Especially smaller firms that may not have resources to engage in legal battle Competition authorities should be sure to separate legitimate opposition of IPRs applications from those with ulterior motives.

5.1.6Suggestions for Further Research

This section put forth recommendations for future research that will look at possible changes that can be adopted and made to future research that will ensure an effective relationship between economic development, innovation and intellectual property protection in developing countries like Liberia. It is recommended that future research should use patents applications and patent granted in domestic jurisdictions instead of using the number of patent applications by residents of developing countries in the US Patent and Trademark Office (USPTO). Using the number of patents filed or granted domestically will give a better perspective to the actual level of innovation in that country. It will reveal the efficiency of the system of innovation; ensuring that there is proper collaboration between the industries and universities. Patent applications filed and granted abroad by residents of a country may not tell whether that innovation is relevant to the domestic country. But filing and receiving patent grant domestically could be evidence of local recognition and appreciation of the value of that patent to the domestic market, holding to the fact that the patent laws of most countries provide that only innovations that are industrially applicable can be issued patent. Thus, when an innovation is domestically applicable, it can add significance to the country's economic growth. An international patent application that is granted may have no real bearing or representation of the domestic industrial requirements and may therefore be of little or no value to the local community

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APPENDICES

Appendix 1: Informed Consent Guide

INFORMED CONSENT GUIDE

Identify yourself
My name is Alexander SackieShiakeh, a final year (Intellectual Property) student from Liberia I am carrying out a study on Implications of an effective Intellectual Regime on the production of Goods and Services in Liberia, I am kindly asking you to participate in this study by answering ...../filling in.....

What you should know about the study:
Purpose of the study:
The purpose of the study is .....(Considering the ineffectiveness of intellectual property systems in Liberia, this study will provide guidance for policy makers to develop and strengthen the intellectual property systems in Liberia that will encourage innovations, invention and creativity for policy options and economic diversification). You were selected for the study because .....(N/A).

Procedures and duration
If you decide to participate you will..... It is expected that this will take about .....(N/A)

Risks and discomforts
Describe any reasonable foreseeable risks, discomforts or inconveniences to the subject/participant (including legal, health, economic or psychological and outline how these will be adressed.) N/A

Benefits and/or compensation
Describe any benefits to the subject or to others which may reasonably be expected from the research. If there are no benefits/compensation please state this clearly. If benefits are to the general population, state this...but don't make unsustainable promises. The study will provide policy option to diversify the economy for using the knowledge economy for sustainable growth and development

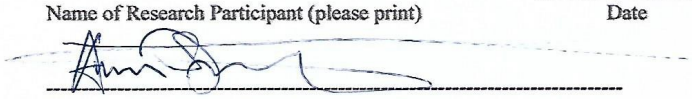
Confidentiality
Should include that any information that is obtained in the study that can be identified with the participant will not be disclosed without their permission. Names and any other identification will not be asked for in the questionnaires. N/A

Voluntary participation
Participation in this study is voluntary. If participant decides not to participate in this study, their decision will not affect their future relationship with .....(participant's organisation or other authority) If they chose to participate, they are free to withdraw their consent and to discontinue participation without penalty. N/A

Offer to answer questions
Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

Authorisation
If you have decided to participate in this study please sign this form in the space provide below as an indication that you have read and understood the information and have agreed to participate.provided above

Alexander SackieShiakeh
---------- December 15, 2020
Name of Research Participant (please print) Date



Signature of Research Participant or legally authorised representative

If you have any questions concerning this study or consent form beyond those answered by the researcher including questions about the research, your rights as a research participant, or if you feel

Appendix 2: AUREC Approval Letter

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

INVESTING IN AFRICA'S FUTURE

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU1881/21 29 January, 2021

ALEXANDRA SACKIE SHIAKEH
C/O CBPLG
Africa University
Box 1320
Mutare

RE: **THE IMPLICATIONS OF AN EFFECTIVE INTELLECTUAL PROPERTY REGIME ON THE PRODUCTION OF GOODS AND SERVICES IN LIBERIA**

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.
The approval is based on the following.
a) Research proposal
b) Data collection instruments
c) Informed consent guide

- **APPROVAL NUMBER** AUREC1881/21

This number should be used on all correspondences, consent forms, and appropriate documents.

- **AUREC MEETING DATE** NA
- **APPROVAL DATE** January 29, 2021
- **EXPIRATION DATE** January 29, 2022
- **TYPE OF MEETING** Expedited

After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.

- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted AUREC.

Yours Faithfully

MARY CHINZOU – A/AUREC ADMINISTRATORFOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE