Universities, Industries, Government Linkage for Innovation: the case of Business Incubation in Addis Ababa, Ethiopia.

A thesis submitted to Addis Ababa University College of business and economics, graduate studies in partial fulfillment of the requirements for the degree of Master of Science in management specialization in innovation and entrepreneurship management

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DECLARATION

University, industry, Government linkage for innovation: The case of business incubation in Ethiopia, Addis Ababa at ministry of trade and industry. I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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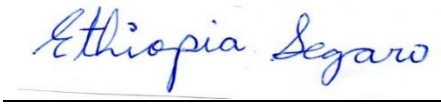
Signature:		**Signature:**	
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STATEMENT OF CERTIFICATION

This is to certify that the thesis equipped by Kassaye Wassie Bizuneh **entitled**: Universities, industries and government linkage for innovation through Business incubation and submitted in partial fulfillment of the requirements for the degree of Master of Science in management Specialization in innovation and entrepreneurship management compiles with the regulations of the university and meets the accepted standards with respect to originality and quality.

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ABBREVIATIONS

AAU: Addis Ababa University

BA: Business Angel

BI: Business Incubation

FDRE: Federal Democratic Republic of Ethiopia

FSMMIPA: Federal Small and Medium Manufacturing Industry Promotion Authority

GEM: Global Entrepreneurship Model

IPR: Intellectual Property Rights

MOE: Ministry of Education

MOIT: Ministry Of Innovation and technology

MOST: Ministry Of science and technology

MOTI: Ministry Of Trade and Industry

NGO: Non-Governmental Organizations

NIP: National Innovation Policy

OECD: Organization for Economic Co-operation and Development

PASDEP: Plan for Accelerated and Sustained Development to End Poverty

TBI: Technology Business Incubation

TH: Triple Helix

THM: Triple Helix Model

TI: Technology Incubator

TVET: Technical and Vocational Education and Training

UBI: University Business Incubation

UIG: University Industry Government Linkage

UIL: University Industry Linkage

UILO: University-Industry Linkage Offices

VC: Venture Capital

VPRTT: vice president research and technology transfer

ABSTRACT

In this study, structural and level of linkage among universities, industries, and government (UIG) were assessed as a means to foster innovation and business incubation in Ethiopia. Furthermore, parallelism of the linkage among UIG with the country's economic development policy and strategy was explored. A qualitative research methodology was used. The data is collected from three entities thought in-depth interview and thus 24 individuals are interviewed. Data analysis and presentation is conducted through narrative inquiry and interpreted qualitatively. Theme, category system, and tables are used to display the result of this study. The study result indicates that, UIG linkages is weak and are taking on in a laissez-fair form which has discouraged innovation environment and the stage of development are with limited areas, dominated by students' internship, partial joint research projects, consultancies and capacity building-I-G in ministry of trade and industry and in the universities is challenged by institutional blockages of normative situation, policy-practice gaps on the third mission of the players, background difference and information and knowledge gaps, finance related difficulty Moreover, lack of trust and conflict of interest, lack of commitment and support from the leadership. This study came up with the model that was designed to improve the practice of innovation, entrepreneurship and business incubation organization of UIG in Ethiopian at ministry of trade and industry. Recommendation and further studies are forwarded.

***Key words**: innovation, business incubation, Business incubators, Triple Helix, university industry government, linkage, Science Park, Technology Park, Innovation Park.*

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CHAPTER ONE

1. Introduction

1.1. Back ground of the study

Transition to a post-industrial mode of production has led to rethinking the development process of countries. According to Dzisah and Etzkowitz (2007b), the goal of industrialization is focusing exclusively on manufacturing of tangibles objects to an economy based on the capitalization of knowledge; consequently innovation is a countries' policy and strategy alignment (Etzkowitz 2008; Porter 2001, Harvey 1992). Governmental policy makers and economic development officials have been challenging to foster increased economic growth, to this end Some researches reveal that government became a variable to stimulate policy and strategy mechanism for technology-based incubator designed to speed the growth and success rate of new enterprises by offering a range of services and support resources (Casson, 1982; Stevenson and Jarillo, 1989; Feldman, 1994; Henry et al., 2003; Lichtenstein et al., 2004; Brännback et al., 2001, 2004, 2007, OECD, 1997; 1999, Tornatzky et al, 2003). Where incubation approaches in developed and developing countries bear many similarities; and at the macro level business incubation is influenced by the nature of the institutional and cultural context; moreover very considerable dependent on political, economic and institutional factors of a countries context(Brundin et.al. 2008).

Research in areas related to business incubation is still in its nascent stages, primarily due to the fact that business incubation as a form of support did not gain currency until the late 1980s and 1990s in many parts of the world. Currently many countries perceive and transform internal and external institutional context and maximize their synergy to the triple helix model of U-I-G interaction systems as a means to foster technological innovation and economic growth; incubators are perceived as a tool that has the potential to advance each player's objectives; accordingly successful incubators is depend on favorable trade, competitive taxation, and regulatory policies, a friendly business environment, strong innovation policy coupled with effective science, technology and innovation action plan (Chandra, 2007,James Dzisah and Henry Etzkowitz 2007 b).In relation to this countries after the second academic revolution shift their strategy of innovation and entrepreneurship network through Business incubation through employ triple helix

interaction (Etzkowitz, 2007, Etzkowitz , 2002,Etzkowitz, &. Leydesdorff L. 1997, Etzkowitz, 2003b, Carayannis and Alexander 2006; Etzkowitzand Zhou 2007, Schumpeter, 1954).

According to (Leidesdorff and Etzkowitz, 1998; Etzkowitz and Leydesdorff, 2000, Fini et al. 2017) governmental support for innovative start-ups is a central body toformulating policies and normative rules for establishing innovative environment and implementation.Universities also operate in business academic spin-offs, patents, setup policies and instruments effect positively on the business incubation (Kortum and Lerner 2001; Carayannis and von Zedwitz, 2005), in this circumstance many world-class universities have transitioned to entrepreneurial universities (Carayannis and Alexander, 2006).Whereas Ethiopian triple helix of U-I-G linkage for innovation and business incubation are at infant stages (De Beer, Armstrong, Oguamanam, & Schonwetter, 2014, p. 327; Ssebuwufu, Ludwick, & Beland, 2012); modalities also at various stages of setting up of business incubation and innovation hubs, and there are severely shortage of resources and spaces and all of them are at nascent stages. However, Enhancing SMEs and new entrepreneurs are stressed in the industrial development policy and strategy and to bring together business incubation and technology transfer mechanism; there for this is a key driving force for shifting to interactive approach to play critical role for innovation and entrepreneurship development and wealth creation; despite this, there is little research done in this area through using the model of double helix for instance : UIL in Ethiopia Daniel (2006) emphasis to establish resource center between the two; Kannan (2012) a gap in linking UIL; Abdu (2013) university-industry partnership (UIP) focusing mainly on technology transfer and internship aspects of engineering education. However, this study was examining university-industry -government linkage for innovation in case of business incubation position.

1.2. Statements of the Problem

In the multidimensional context of socio-economic development, there is a challenge to integrate from different institutions. Thus fastest development of innovation and market competitiveness in the global world, also a challenge to craft and run-through the modern spiral of linkage among UIG. Even though the problem has global treatment, the case is much worse in developing countries than developed world (Guimon, 2013).African universities have often been criticized as ivory towers that full fillteaching and research that are immaterial to the needs of the social,

economic challenges. In Worldwide expansion of the modern economy, the studies show that the economic stagnation fundamental questions are designate through low capacity of knowledge generation and wise use of economically applicable knowledge (Adeoti, 2009). This principally originates from a low understanding of the UIG linkage of the state (D'Este & Patel, 2007: 1296). Number of studies reveals that innovation is a countries' development program policy and strategy alignment and it can be considered as a strategic position in the productivity of new venture particularly starts up business, hence developed and non-developed countries shift in triple helix innovation system, (Etzkowitz 2008, (Porter 2001,Harvey 1992) . In the other view Science park, Innovation /Technology Parks are reflected in the helix system; venture capital (VC) , Business angels (BA) also have significant connection with the helix among others (Etzkowitz and Zhou 2007; Harvey 1992, Etzkowitz 2008; Porter 2001; Yuzhuo Chai 2014), Yuzhuo Cai 2013;Etzkowitz and Leydesdorff 2000, and Etzkowitz 2002);Whereas, some researches reveal that this linkage is either weak or does not grasp at all as publicized in a meta-analysis(Freeman, 1987; Freeman and Lundvall, 1988;Marina Ranga and Etzkowitz1997, Cooke, 2004; Meyer, 2006; Van Looy *et al*, 2007; Wong, 2007; Lawton Smith and Bagchi-Sen, 2010).Sited in Marina Ranga and Etzkowitz 1997).Related study has been conducted mainly in the western world and in the nonwestern world also done: Netherland, Finland, Sweden, America, Germany, British, and Soviet Union, Mexico. Canada, France, Israel, China, Japan, Korea, India, Pakistan, Bangladesh, Thailand, Singapore, Malesia. In the African countries South Africa, Egypt, Tanzania, Nigeria and Zambia those countries are effort to address the UIL study. Nigeria is the one to practice the real triple helix/UIG approach in different case .There is no related study in Ethiopia in to my knowledge. This study, therefore, attempts to examine university-industry-government linkage for innovation through business incubation.

1.3. Research Question

1. What are the current status of University-Industry government linkage for innovation and business incubation in Ethiopia particularly at ministry of trade and industry?

2. Why Government, university and industry have less consideration for policy frame works and practice of innovation and business incubation in the helices.

3. Who is the possible authority to form the linkage and what roles playing in the UIG linkage?

4. What can be done to build up the link between university industry and government via business incubation and innovation in the case of ministry of trade and industry?

1.4. Objective of the Study

1.4.1. General Objective

The general objective of this study was examining triple helix interaction of university- industry-government linkage for innovation in the case of business incubation.

1.4.2. Specific Objective

1. To explore the current status and approach of University Industry government linkage for innovation and business incubation in Ethiopia particularly at ministry of trade and industry.
2. To explore Government, university and industry consideration for policy frame works and practice for innovation and business incubation in the helices.
3. To identify the possible authority to form the linkage and what roles playing in the linkage?
4. Forward the mechanisms to solve the existing problems of the link between business incubation, university industry and government in the case of ministry of trade and industry.

1.5. Significance of the study

The study was particularly significant to a range of stakeholders involved in promoting business incubation including government, universities, industries that support incubation efforts to align with the state development policy and strategy; financial institutions, potential entrepreneurs, clients of incubators. Based on the landscape of the result, the university leaders, industry owners and policy makers can design the basic measures; the academic staff can get a better understanding that enables them to know the industry. Researchers who have an interest in business development mechanisms, university industry government linkage philosophy and innovation-based incubation were find value in this study, new insights for further study may be also got from the study.

1.6. Delimitation (Scope)

The study was focused on the university- industry-Government linkage for innovationin case of business incubation, at ministry of trade and industry, different associations who are those located in Addis Ababa and Addis Ababa university research and technology transfer section. There is still

possibility to originate some broad-spectrum trends, and facts which would contribute to the theory and guide further empirical and theoretical research.

1.7. Limitations of the Study

The initial intention of this study was to conduct on the university industry government linkage (helix) for innovation through business incubation all Ethiopian universities, associations and governance systems. However, due to scarcity of time and budget, the study was attempted to examine university industry/associations and government structures located in Addis Ababa. Furthermore, investigation suffered from a number of constraints, through the phenomena of COVID 19, some interview data was collected on telephone conversation.

Therefore, it may not show the rounded outlook of UIG activities in in Ethiopia. Moreover, this study did not explore detail matters specific to universities. However, efforts were made to reduce its limitation through designing of appropriate sampling techniques, prior communication with the study participants and frequent reviewing of the research procedures.

1.8. Operational Definition of Key Term

University: For the purpose of this study, 'university' refers to the institutions which take higher education in Ethiopia which transfer knowledge in many disciplines. Moreover, the words „higher institutions", „higher education", „Higher Educational Institutions (HEIs)", „Institutes", „academics", „academicians" have been used as synonymous to each other and taken to mean „institutions assigning higher learning, that is diploma and higher level programs.

Industry: For the purpose of this research work, 'industry' means various private manufacturing and service industries which producing goods and services.

Government: A group that exercises independent authority over a nation, state, society or other body of people. Governments are generally responsible for making and enforcing laws, managing currency, and protecting the public from external threats, and may have other duties or privileges..http://www.investorwords.com/16458/government.html#ixzz53NLGSR6N

Linkage: For the purpose of this study, the words 'convergence', 'interface', 'interactions', 'partnership', 'alliance', 'cooperation', 'linkage' and 'strategic relations' have been used as

synonymous and taken to mean the ‘interaction ’ between university, industry, government spirals for innovation and business incubation .

Innovation: For the purpose of this study innovation is kind from interpreting it as the creation of and first successful application of a new product or process, creation of a new idea a form of knowledge and a new way of delivering quality or better value.

Business incubator: For the purpose of this study, business incubators are organizations which promote innovative projects and aims to support entrepreneurs so that they can develop new ideas and turn them into successful enterprises.

Business incubation: For the purpose of this study business incubation is effective talent links, technology transfer organizations, capital movement systems, and technical know-how groups for leveraging entrepreneurial talent and accelerating the development of new companies, and unique institutional arrangement that is primarily concerned with developing entrepreneurial culture in a community.

Triple helix: For the purpose of this study Triple Helix systems according to the systems theory (Carlsson and Stankiewicz, 1991; Carlsson et al. 2002; Edquist 2005; Bergek et al. 2005) as a set of institutional spheres of University, Industry and Government, with a wide array of actors; collaboration and conflict moderation, collaborative leadership, substitution and networking; and described as processes taking place in what label the ‘Knowledge, Innovation and Consensus Spaces.

1.9. Organization of the study.

The research has five chapters. The first chapter deals with presentation of statement of the problem, background of the study, objective and research question of the research and significance of the study. The second chapter provides an overview of related literature and researches accompanied so far and deal with conceptual model. The third chapter outlines the research methodology and it also discusses issues such as study area, study design, study subject, sampling, sampling techniques and sample size, while the fourth chapter discusses the key findings of the study and the last chapter five attempts to offer an overall conclusion .

CHAPTER TWO

2. Review of the Literature

2.1 Innovation

Literatures in innovation have shown the importance of cooperation between many public and private sector organizations for effective high-tech development (OECD, 2014). And one of the most valuable elements for economic growth and the welfare of the nation (Atkinson et al. 2012). Entrepreneurship also the main driving force behind the innovations nowadays. Due to such significance, scholars of entrepreneurship are paying more attention to business incubation, academic spin-offs, science and Innovation Park and other elements of innovation format at national level (Feola et al. 2017a, 2017b). Since many years many companies are developed through academic spin-off and their contribution to economic development has been clearly stated and a related stimulating about how entrepreneurial capabilities of the academia can be stimulated has developed (Obschonka et al. 2012). New venture creation and in fact recognized ventures operate with the intent of being successful but failure is ever present due to the environment ventures operate in. Evolutionary theorists argue "that the forces of selection that eliminate uncompetitive firms are necessary phenomena that contributes to the maintenance of healthy populations of organizations" (Aldrich, 1999). However, the forces of selection alone cannot be allowed to determine the number of organizations operating in an economy. This has therefore, given rise to attempts at reducing the likelihood of venture failures requiring not only the development of a favorable business environment and climate, but also establishing strong institutions that will assist businesses reduce the likelihood of failure by means of business incubation organization.

2.1.1 Concept of Business Incubation and Incubators.

Business incubation is a unique institutional arrangement that is primarily concerned with developing entrepreneurial culture in a community. To Brooks 1988, the whole concept of incubation is attitudinal in that incubation fosters a community attitude of encouraging and supporting emerging firms to be successful with its success dependent on three fundamental factors: "an entrepreneurial and learning environment, ready access to monitors and investors, visibility in the marketplace" (European Commission, 2002). the incubation concept aims at achieving some fundamental objectives which include to create new jobs and businesses, foster a

climate of entrepreneurship, commercialize technology, diversify, revitalize and accelerate growth of industry and local economies, reduce company mortality rate, reduce unemployment, increase university-incubation interaction and foster technology development (Bizzotto, 2003; Mutambi et al. 2010; Al-Mubaraki & Busler, 2011).The objective of business incubation is achieved through business incubators and incubators are major actors in the entrepreneurial ecosystem by linking talent, technology, capital and know-how (Todorovic & Moenter, 2010; Bejarano, 2012; Levakova, 2012; Al-Mubaraki et al. 2013). However, definitional challenges exist on what constitute business incubators or business incubation (Barge& Norrman, 2008). According to GEM model takes into account the social, cultural and political context of the surrounding environment, subdividing the social conditions into two branches firstly, the economic factors required for developing entrepreneurial activities: "structural conditions" including the level of openness to the market, the government's role, management, technology, R&D, the physical infrastructures, the financial and labor markets in addition to all the social and legal institutions. The second branch covers the "structural entrepreneurial conditions" and including factors such as financial support, government policies and programs, education and training levels, transfer of R&D results, commercial and professional infrastructures, openness to internal markets, access to physical infrastructures, social and cultural norms and the protection granted to industrial property rights and demands organizational linkage .

2.1.2 Overview of Business Incubators Worldwide

2.1.2.1. North America: Business incubators trend in different countries have dissimilar policy direction and support: in North America funded primarily by government grants, university and corporate support as well as from services and rents (Statistics Canada 2006a, Chandra and Fealey 2009). Australia's also create an innovation strategy (2009-20) aims to enhance industry-driven research and to increase the proportion of businesses involved in innovation and networks of enterprise connect centers provides broader business support to SMEs and ICT, clean energy and health research (OECD 2012.

2.1.2.2. South America: South America also working at enabling the entrepreneurial spirit and Science, Technology and Research removing institutional barriers as well as developing incubation market space (Chandra and Medrano Silva 2012). Brazil, Chile and Colombia The latest World Bank's doing Business report (World Bank 2014) ranks Chile as the best country in Latin

America to do business, followed by Peru. Brazil also leading country in business incubation in Latin America and is considered Fourth ranking business incubation market in the world (Mutambi, Byaruhanga et al. 2010).

2.1.2.3 Brazil : Incubators and business incubation in Brazil originally outdone those from the united states of America but eventually, evolved to address specific local needs and opportunities (Almeida, Carvalho de Mello et al. 2012). Brazil has a well-developed incubation ecosystem and science parks, and is considered one of the most dynamic and successful incubation movements in Latin America (InfoDev 2010b). Incubators emerged in the mid-1980s with a bottom-up approach based on a triple helix model in which universities plays a crucial role in the creation of incubators and in the transfer of innovation to new businesses (Almeida 2005).

2.1.2.4.China: China heavily influenced by the central government, with the Provincial governments playing a minor role in adapting innovation strategies to their specific environments (OECD 2012). The Chinese government is financially supporting both the construction and operations of business incubators as a policy tool to transition effectively to a market system and to a high-technology-driven market economy (Chandra and Fealey 2009).

2.1.2.5. Korea: Korea is another leading country in business incubation in Asian courtiers and the Incubation was helped by relevant small enterprise policies away from the old economy dominated by large businesses to the new knowledge-based economy led by startups and entrepreneurs (Suk and Mooweon 2006).

2.1.2.6. Singapore : The Singaporean government has put in place various mechanisms to build its innovation system is government led Agency for Science, Technology and Research (A*STAR) to promote research and infrastructure like automotive manufacturing, nanotechnology, natural resources, space, and safety and security(OECD 2012).

2.2 The Triple Helix Approach

This is a substantial interaction between different organization towards common goal objectives, in the last decades, in several countries the rigid division of labor between Universities and business started to diminish away, moving from the ivory tower model to the Triple-Helix model (THM). In the second academic revolution, integrating a mission for economic and social development is transforming the traditional Teaching and Research University into an Entrepreneurial University. A theory explaining this new setting is the Triple Helix model

(Etzkowitz and Leydesdorff, 2000; Etzkowitz and Zhou, 2007), which is a development strategy based on collaborations among UIG where the university has the leading role in innovation. This model, which implies instability, better explains the relations in the non-linear innovation process, since we can state that in the knowledge-based society innovation is characterized by duplication model well-integrated in the ecosystem. In line with this transformation of academic institutions is capitalization which means that knowledge is created and transmitted for use as well for corrective advance and interdependence that is the entrepreneurial university interacts closely with industry and government and it is not anymore an ivory tower isolated from society. There for moving away from the isolation, universities have created technology transfer/licensing offices and press offices/media centers in order to establish a point of contact, to improve the standing and visibility of the University. Considering financing one of the main drivers of the innovation process, we think that a relevant role is played by financing organizations (Carayannis & Campbell, 2006), besides the actors of the Triple-Helix model moving forward from the triple-helix model, a "Quadruple Helix" model involves financing organizations which are needed to foster revenue growth and commercialization: this helix could be considered the fourth partner in a revised model for explaining the knowledge-based economy.

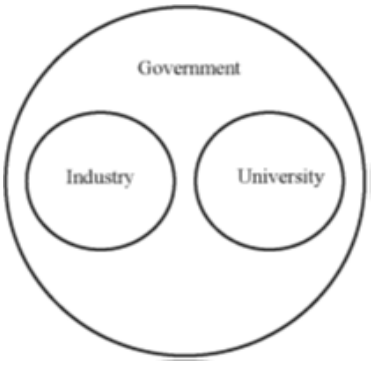
In line with this that Innovation is sustained by free interaction of information, human resources, financial capital and institutions and includes as a "fourth helix" and fifth helix the "media-based and culture-based public" or civil society (Carayannis & Campbell, 2009; Khan & Al-Ansari, 2005; Alfonso et al., 2010). Arguing that the triple helix model is not a sufficient condition for long term growth, this fourth helix associate's knowledge production and knowledge use with media, public discourses, creative industries, culture, values, life styles, feminine and art.

2.3 The Triple-Helix Model

Regarding the model the most cited model in the knowledge based economic development of UIG linkage especially in industrialized society. One of the major transmitters of the model Etzkowitz 2002 :) defines Triple Helix as "a spiral model of innovation that captures many communal relationships at various points in the process of knowledge development. The boundary is in flux (Leydesdorff, 2000: 245). And "mutual relationships among the UIG and have developed into triadic relationships (Etzkowitz, 2011). In this specific model, the market becomes the guiding principle of social interaction while the government will assume the role to moderate exchange relations to ensure a living wage (Etzkowitz, et al., 2007:14). In relation to this, three different

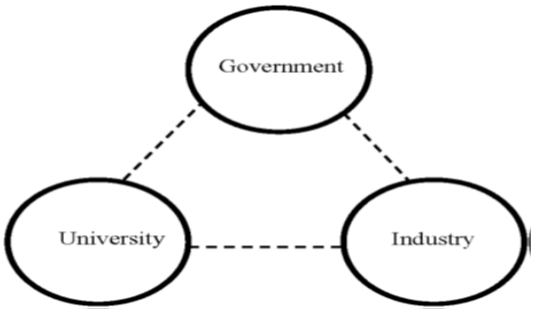
typologies of the triple-helix model can be dealt with. As Etzkowitz, et al. (2007: 15) has put the Triple Helix starts from three different points:

Statist Triples Helix. Source: Adapted From Etzkowitz and Leydesdorff(2000)



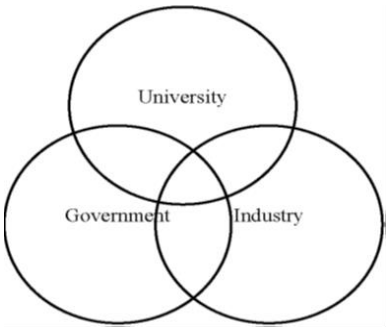
Statist Triple Helix is a dominant regulatory system carried-out by the government; the state or the government own both the university and industry and regulate the type of relation that exists between the two. It is a configuration, in which the government plays the leading role, stimulating academia and industry, which may consequently; limit the initiative and innovative capacities of the two institutions (Ranga & Etzkowitz, 2013: 239). In this case, both the industries and universities are working under the jurisdiction of the government with very little interaction (Etzkowitz, et al., 2007: 16).

Laissez-Faire Triple Helix .Source: Adapted from Etzkowitz and Leydesdorff (2000**)**



The second type of the Triple Helix is a laissez-faire type in which the three actors operate independently each other (Etzkowitz, et al., 2007: 16). The authors further explain that the university offers basic research outputs and qualified workforce for the spheres. That the private sector cannot or will not provide. It is characterized by limited state intervention in the economy with the industry as the driving force and the other two spheres appearing as secondary support system with limited concern (Ranga & Etzkowitz, 2013: 239)

The interactive triple helix. Source: Adapted from Etzkowitz and Leydesdorff (2000)



The interactive Triple Helix typology is the shared characteristics of the three spheres. This typology includes overlapping but independent, institutional spheres (Etzkowitz, et al., 2007: 16). Natural socio-economic and cultural belief systems have established a trilateral sequence (Etzkowitz, 2002: 11). In triple helix of university-government interactions, both advanced and growing nations experiment with locating better mixes of functions and institutions (Etzkowitz, 2007: 16).

2.4 The Role of the Players in the Helix

2.4.1 The government

In different parts of the world government play a critical role in strengthening the university-industry government linkage. They set both universities and industries accountable for what they are producing and the function they play in the economic growth of a country. However, this is somewhat different based on the policy perused by the governments as well as the level of economic development of the country. Despite this, "universities are often included in government economic plans" (Altbach, 2011: 7). further argued that the state should also promote credit lines to stimulate innovation in business and universities/research institutes, and a broader, but not least, invest in the country's education system, based on the formation of intellectual capital of a nation (Magacho, et al., 2014: 5; Etzkowitz, 2008: 63).This could be by designing policy frameworks that guide the interaction among the helices. Moreover, the government can create a supportive environment for financial support from the industries through taxation and other research collaboration activities. In this regard, Etzkowitz, et al. (2007: 14) state, "the government must help to support the new developments through changes in the regulatory environment, tax incentives and provision of public venture capital". Put specifically, the state may take actions in the formation of public policies that promote research and development, foster the reduction of

uncertainties and stimulate investment in technological business incubation ecosystem (Etzkowitz, 2002)

2.4.2 Universities

This may involve a very high degree of subject, unique inputs they require (students), and their strategic position in research and technology transfer. According to Etzkowitz (2002: 1) state those with the establishment of the Triple Helix model of UIG interactions, universities are expected to play a chief role in strengthening the relationship. Hence, universities assumed to take the prime initiative in building the triadic relationship. In addition to this, universities are expected to link international issues with the local contexts through knowledge production and transfer across the globe.

2.4.3 Entrepreneurial university:

The entrepreneurial university research argue that As the university becomes more closely involved in the transfer of technology and the founding of new firms, it attains a new entrepreneurial identity (Etzkowitz, 2001). In line of that, Universities are increasingly being called upon to contribute to economic development and competitiveness (Feller, 1990). This shows that, university is one of the factors for one country social, economic and political change. The increasingly widespread perspectives of 'entrepreneurial science, 'entrepreneurial university and 'entrepreneurial scientist show the changing nature of the universities' mission and organizational behavior in an educational and research dimension (Etzkowitz et al., 2000; Boardman, 2009).

2.4.4 Industries

The role of industries in strengthening the linkage with the government and the academic world is immense. Industries serve as the training grounds for the university graduate who joins the labor market with the necessary skills and knowledge. In addition to this, industries also provide funds for the universities to promote research and technology transfer. Even they may take the prime initiative to conduct joint research works. In relation to this Etzkowitz, et al. (2007: 14) argues that "by taking the initiative to develop training and research, the industry may also play a vital role similar to universities". In addition to this, "when the ties between the industry and the university is potentially strong, the industry may also be able to increase local economic development by

offering skill and productive human resources to create competitive advantages, who can make use of university innovations" (Hamdan, et al., 2011: 791). Moreover, companies are directly responsible for innovation and locus of the innovation process because they have the mission to capture the knowledge of science and technology, develop, produce market and distribute the technology or knowledge derived from it, promoting economic development and local levels (Magacho, et al., 2014: 6).

2.5 Triple Helix Rationalities

Organizational actors in the three Sectors have respectively realized that engaging in others' fields is a necessary but not sufficient condition for achieving the desired goals. In addition, the intra-organizational transformation also causes new challenges and demands within and across sectors (Etzkowitz 2008) evolution of trilateral interactions between the three sectors, characterized by increasing interdependency between the three spirals: One spiral has a significant influence on the other's actions, and through the interactions, organizations in each spiral are able to find new ideas from the others to solve problems and meet new needs. "The firm is thus transformed from a competitive unit related to other firms solely through the market to a Triple Helix entity increasingly based on relationships with other firms as well as academia and government" (Etzkowitz 2008, p.58). In relation to this the interactions also result in the creation of hybrid organizations, such as incubators, joint research centers, science parks. The most crucial development in Triple Helix inter-organizational relations is the cooperation and interaction between university and industry, initiated on trust between the two parties.

Trust is guaranteed by an advanced institutional context for IP protection. According to Etzkowitz (2008), effective interaction between the three spirals is also subject to broad social participation, including both top-down and bottom-up initiatives. He further implies that successful Triple Helix operation is not coordinated entirely by the state, but also depends on the commitment at the local level as well as the inputs of a variety of innovation actors. It has also been argued elsewhere that as policies related to innovation systems are often challenged with issues that are both complex and controversial, one attempt to deal with such a complex problem is thus through citizen involvement (Griessler 2012). Etzkowitz's position is consistent with the ideas of Quadruple Helix (Carayannis and Campbell 2009) in which society or the public is added as the fourth helix, but Leydesdorff and Etzkowitz (2003) do not consider the necessity of transforming ,the Triple Helix

to Quadruple Helix by arguing that civil society or the public is the institutional foundation in which the Triple Helix has evolved.

2.6 Theoretical and Conceptual Framework of System Theory

The triple helix model is a strategy of development based on the collaboration among different institutions such as universities, firms and financial actors and governments, systems theory raises questions about how society is organized on a macro-level in different functional systems such as politics, economy, media or science and which relationships are upheld between them: "Society can be seen as functionally differentiated, when it constitutes functional systems in order to solve specific problems" (Luhmann, 1988). As Willke (1996) is arguing, the modern systems theory has become one of the main paradigms within social sciences because the highly organized society. This theory undertakes that 'the whole is greater than the sum of its parts' (Johnson, 2001: 135; Hansen, 1995: 9; Barker, Sturdivant & Smith, 2000: 4; Mizikaci, 2006: 43; Betts, 2003: 38).

This implies the interaction among the inputs to the system, the process and the interaction among the parts will have an impact on the outputs to be produced. Moreover, governments' investment in innovation as a means of wealth creation is also considered. As a result, the three parties-government, industry and university are expected to play an unparalleled or nonlinear role in an integrated and co-operative manner for their mutual benefit to bring about the desired results.

2.6.1 Concepts and origins of systems theory

Conceptually, a 'system' is a set of elements that function as a whole to achieve a common purpose (Betts, 2003: 38). It is also defined as complexes of elements standing in interaction (Bertalanffy, 1969: 11). The role of each of the parts constituting the system as well as achieving the purposes cannot be undermined. In its comprehensive sense, general systems theory has become a set of principles, tools, problems, methods and techniques related to systems (Barker, et al., 2000: 5). In systems theory, the conception that "the whole is greater than the sum of its parts" (Mizikaci, 2006: 43; Barker, et al., 2000: 135; Betts, 2003: 38) has got brave sounds in popularizing the theory. This is because the interaction among the elements will add value to the overall performance of the system (Betts, 2003: 38). Hence, the nature of the parts are determined by the whole, and at the same time, the parts are interconnected dynamically with each other; cannot be viewed independently from the whole (Mizikaci, 2006: 43).

2.6.2 System components

Organizations, in these case universities, can be viewed as a transformational model containing various components, which are continuously interacting. They have boundaries that describe them from the external environment, inputs that help the organizations to function properly, have throughput or process so as to produce outputs. Depending upon their degree of interaction with their environments, systems can be open or closed (Johnson, 2001: 135; Betts, 2003: 38; Mizikaci, 2006: 44; Hansen, 1995: 4).

2.6.2.1. Closed systems

Refers to systems separate from the external environment. And an organization may be sufficiently independent of its external environment so that its problems can be analyzed in terms of internal structure, tasks, and formal relationships (Johnson 2001: 135).

2.6.2.2. Open systems

Open system have a high degree of interaction with their environments. Intellectual and financial inputs are usually taken as the primary types of energy for the proper functioning of the system (Betts, 2003: 40). Open systems are in continuous interaction with its environment.

2.7 University-Industry Government Linkage Global View

The matter of university-industry government linkage has acknowledged global attention with the increasing roles of the three actors and fast increasing of market competition and rapid technological advancement. In support of this, Burnside, Beth and Within (2008: 26) state that balanced cooperation is highly valued in the era of globalization where there is also a growing need for an international market network, and increasing demand for research and development , innovation and entrepreneurship development and business internationalization than ever. This implies the mission for strong linkage between the three economic physical assets of the country to remain competitive in the global world. Strong knowledge-based relationship becomes a matter of survival than choice. Again, Burnside, et al (2008: 26) strongly argues the viability of the 'go-

it-alone' strategy to innovation is no longer convincing. Nowadays, the complexity of issues and the need for a multiplicity of techniques require adequate discussion, the flow of ideas and knowledge exchange. This is especially true in the case of university-industry-government linkages. Therefore, to remain competitive and viable on this globe producing competent graduates that satisfy the demand of the market seems mandatory. This needs knowledge-based collaboration to remain competent in order to respond to the touched needs of the society. Knowing of its importance, universities in different parts of the world have a long tradition of university-industry government linkage (Nimtz, Coscarelli & Blair, 1995: 10). These traditions vary from country to country. At a time of economic stagnation, governments set weight on universities to come-up with solutions through research and technology transfer. "During the times of economic stagnation, the pressure put on the universities to come up with solutions was very strong. This was, in fact, true in the case of the USA in the 1970s and early 2000s where universities were forced to take their third role so as to contribute more vibrantly to the economic development through technology transfer, more tangible form of the patent, license, start-ups, science parks, business incubator, innovation and technology park and innovation achievement.

2.8 University-Industry-Government Cooperation in Ethiopia

The core development objective of The Government of Federal Democratic Republic of Ethiopia (FDRE) is poverty eradication. hence government had have design and implement Sustainable Development and Poverty Reduction Program (SDPRP) which covered the years 2002/03-2004/05) and a Plan For Accelerated and Sustained Development to End Poverty (PASDEP) that ran from 2005/06 to 2009/10 the Growth and Transformation Plan (GTP) has been prepared with clear objective and targets to success the general objective of the country the industry and university linkage in terms of technology incubator play a determinant role(MOFED, 2010). However, there are very few channels linking business incubation and reduce unemployment. The technological or industrial base to absorb and apply graduate research results is weak. In an attempt to hold this problem, Ministry of trade and Industry and Addis Ababa University have instituted a Cooperation Program. The Co- operation Program was established in February 1986. The agreement provides an institutional mechanism through which collaborative endeavors can be initiated and undertaken so that the technical expertise and facilities of the two institutions may be utilized to assist both in realizing their respective developmental objectives. (D. Gemeda, 1996, p 236). Moreover, AAU understands the effectiveness of university and industry linkage in

Ethiopia's present development level and is working on investigating and proposes mitigation of the limitations in all stakeholders; the industry, the government and the university to work on University-Industry and government cooperative in business incubation which is very low at the moment. (Dr. Mengesha, 2013).

2.9 Ethiopia's Industrial Development Strategy

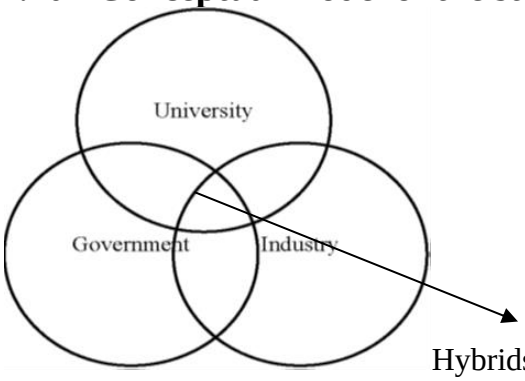
Ethiopia's development goals are positioned down in the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and its industrialization goals are set out in the Industrial Development Strategy. PASDEP is the country's second poverty reduction strategy paper, drafted for the five-year period 2005/06-2009/10. It has a much more clear emphasis on private sector development, competitiveness, and growth than its antecedent. The Industrial Development Strategy, which was approved in 2002, is regarded as the country's first-ever comprehensive industrial development strategy. It recognizes the need for deep institutional reforms of the national institutional system, which is characterized as non-transparent, bureaucratic, anti-democratic, and non-participatory leadership. General, the plan reveals a quite clear strategic alignment and the government's strong commitment to industrial development and structural change. It is more explicit than the own plans of many other countries, which typically provide standard lists of desirable goals, without offering much practical guidance for policy makers. Agreed the stability of the government, which has been in power since 1991, Ethiopia's development can build on a long-term strategy. (Tilman, Altenburg, 2010, p17).

The most projecting focus is on agricultural demand-led industrialization (ADLI). Dedicated technology and training centers have been set up to support specific industries .While this strategy, focused on infrastructure and supply-side technical inputs, creates important preconditions for rural development, it has not yet produced an important results. Given the limited size of local markets and the need to generate foreign exchange, there is a clear focus on export industries. Export-led industrialization is also one of the lessons the government has learnt developed nation. Export industries benefit from favorable land lease rates, soft loans, tax incentives, subsidies for participation in trade fairs and international missions, and other services.

The Industrial Development Strategy talks mainly of agro-processing and garments as potential entrants. However, the strategy red-top recognizes that low labor productivity seriously constrains export competitiveness. Small and medium enterprises account for the lion's share of non-farm

employment in Ethiopia, but operate at very low productivity levels. Because are necessity entrepreneurship as contrasting to opportunity entrepreneurship, innovative and promising business idea, capital, as well as technical and managerial skills and not having Linkage with university. Government support is mainly guided through the Federal Small and medium manufacturing industry promotion authority (FESMIPA) and the respective centers in the regions. Critics, however, perceive the SME policy as a job creation scheme that may be useful to provide poor people a decent source of base income, but does little to nurture innovation- and growth-oriented entrepreneurship. Alternatives that have not yet been exploited in Ethiopia include: rewarding innovative business concepts; encouraging graduates from universities and colleges to set up new firms and coaching them with the help of experienced business people; support programs that help link micro, small and medium firms to larger firms, as suppliers and public procurement with training programs to upgrade small firms. This requires collaboration between (FESMIPA) and those institutions that promote larger industries, such as the Ethiopian Investment commission and federal and regional universities to nurture business and cluster development. Much more can also be done to improve provision of business development services outside the services provided through the TVET system. As the public system of (FESMIPA) is unable to reach out effectively to all small and medium enterprises, additional networks of service transfer may be required (Amha 2006).

2.10 Conceptual model of the study



Hybrids interface to business incubation

This conceptual model indicates the interface area of the helix, university-industry-government linkage have got widespread popularity with the increased roles of universities in economic development and enhanced global competitiveness in knowledge production and transfer. University-industry linkage is currently viewed from the roles of the government, university and industry perspectives. In relation to this, various literatures conceptualized the issue of university-

industry-government linkage by model a synergetic relationship among these three role players (Ranga & Etzkowitz, 2013: 237; Leydesdorff, 2000: 243; Etzkowitz, Dzisah, Ranga & Zhou, 2007: 14). These parties have different roles to play. The government may help by setting regulatory frameworks, providing innovation incentive, providing start-up financial benefits and resolving issues related to intellectual property (IP) rights. Similarly, universities may take initiatives to conduct problem-solving research and disseminate their research outputs to the society, organizing university business incubation space and academic spin-offs. In the same manner, the industry may collaboratively work with the academia by sponsoring researchable projects and establishing joint innovation and science centers to encourage business incubation and innovation. Traditionally, the central mission of universities was producing competent manpower that the economy demands through teaching and learning. Through the process, however, research was also seen as the major activity to be carried out by universities in collaboration with teaching and learning.

More recently, the expectation from universities in enhancing the frontiers of knowledge to the global world has become more prominent (Bloom, Canning & Chan 2006) their roles go beyond the university compound, which traditionally placed universities as ivory tower entities isolated from the global world. The other pressing factors that justify the need for university-industry - government linkage is economic dynamism (shifting from agrarian, industrial to information), change in the nature and intensity of technological development, the emergence of the competitive global market and enhanced competitiveness than ever (Bell, 1996: 322; Ahmed & Jumani, 2013: 201). The economy is changing particularly from industrial to information, which requires adequate knowledge.

Similarly, technology is changing rapidly in un-presented rate demanding a knowledge-intensive economy than labor-intensive economy. Innovation is specifically an industry-located concept. Nelson and Rosenburg define Innovation as ``the means by which firms master and get into practice product designs and manufacturing processes that are new to them . Firms' internal resources are augmented by those from different environments, including universities and government laboratories, as well as other firms (Archibugi and Iammarino, 2002; Dosi, 1988). In this conceptualization, innovation should be understood as a system rather than as a series of isolated events (Bunnell and Coe, 2001; Shapira, 2004).

CHAPTER THREE

3. Research Methodology

3.1 Study Area

The study was conducted in the Ministry of trade and industry, office of the vice president for research and technology transfer of Addis Ababa University, and offices of different associations in Addis Ababa, Ethiopia. Ministry of trade and industry was selected because it is a pioneer Ministry, in Ethiopia, that has been supporting the trade and manufacturing industry to establish a linkage. Federal small and medium manufacturing industry promotion authority (FSMMIPA) is also part of the Ministry of trade, and industry. FSMMIPA was established as means to realize the government's Growth and Transformation Plan (GTP).

Entrepreneurship development and business incubation array is embedded within FSMMIPA to accelerate the ongoing transition of Ethiopian economy with a goal of becoming a middle-income country in 2025.Office of the vice president for research and technology transfer of Addis Ababa University, and offices of different associations were included because these offices are playing the leading role in the establishment of linkage among University Industry and Government to enhance entrepreneurship development and business incubation.

3.2 Sampling Method, And Sample Size

Purposive sampling method was used based on the existing sampling guideline for qualitative research (Creswell, 2009; Cooper and Schindler 2008).Twenty-four individuals were purposely sampled (Table 1). The number of the sample was dictated by the scope of the research, and resources. Though, the sample size of qualitative research varies by the data collection technique and scope of the research, the sample size of qualitative research is generally small (Creswell, 2009; Cooper and Schindler, 2008). Strategic leaders, State Ministers, advisor to the Minister, deputy general directors, research and technology transfer unit and sector of Addis Ababa University, and leaders of different industrial associations were purposively selected (Table 1).Twenty-four in-depth interviews were conducted out of which eight of them are at the ministry of trade and industry, eight of them from industrial associations, and the remaining eight of them are from Addis Ababa University. The participants were selected arbitrarily by their positions in

each organization, their experiences, and based on the conceptual or theoretical categories of participants developed in the process of establishing the research design.

TABLE 1. Position of purposively sampled participants, the division/department/sector that they are leading, and where the division/department/sector belongs (ministry/university/association).

Study participant's position	Division/Department/Sector	Type of organization or Institution
State minister	Manufacturing sector	Ministry of trade and industry
State minister	Trade and regulatory sector	✓
Advisor to the minister	Agro-processing, textile and leather sector	✓
General Deputy director	Manufacturing industry implementation capacity building	✓
Director	Agro –industrial parks, industry development coordination	✓
Director	Chemical and construction input industry study and support.	✓
Director	Policy and program, study monitoring and evaluation	✓
Team leader	Chemical and construction input industry study and support.	✓
Director	Addis Ababa university press	Vice President for Research and Technology Transfer (VPRTT) of Addis Ababa university
Director	Research	✓
Director	Community service	✓
Director	University-Industry Linkage & Technology	✓
Senior Expert	Research consultancy and out research Services	✓
Senior Expert	Adaptive Research & Incubation	✓
Senior Expert	Technology Transfer, Science parks & Intellectual Property	✓
Secretary General	Ethiopian chamber of sect oral association	Associations/industries
President	Ethiopian Leather industry association (ELIA)	✓

Secretary general	Textile & Garment Manufacturers Association	✓
Secretary general	Metal and chemical industry Association	✓
President	Meat producer and exporter association	✓
Secretary general	Ethiopian food and spice producer association	✓
Manager	Women Association in metal industry	✓
Principal researcher	Ethiopian economic Association	✓

3.3 Data Collection Method

The intended purpose of the study was explained to the participants and the participant's informed consent was secured. The status of the University-Industry-Government linkage, who take the initiative of the whole scenario of innovation and business incubation for the countries policy and strategy alignment, and elements to hamper or ease were emphasized during the data collection. Thus, qualitative methods of data collection instruments were held to give rich and detail information about the case under study; interview, and document analysis were employed.

3.3.1 Interview

It is a face-to-face communication between interviewee and interviewer on certain area of inquiry, and there by allows the interviewee to speak up freely.

Structured open ended interview was used for the primary data to get evidence about business incubation and innovation scheme, funding scheme, space facility, policy and guide line, leadership, helix existence and level of modernity, technology infrastructure and facilities, and internal governance of the three players and the interviewer used short-hand notes when respondents spoken.

3.3.2 Secondary data source

Data were extracted from documents of policies, guidelines, and educational directives, MOE, MOST, STI, MOTI, Growth and Transformation Plan GTP I and II, industry road map, micro and SMEs, entrepreneurship policy and strategy, trade directive, and different government proclamations through managed eleven (11) documentary investigation question, then these data were used to validate the primary data obtain from the interview.

The secondary data reviewed documentary were Technology and Innovation (STI) Policy of Ethiopia; the National Science, Technology and Innovation (STI) Policy (MOST, 2016); The Research and Technology Transfer and Governance Framework of Ethiopian Higher Learning

Institutions (MOE, 2016); Intellectual property (IP) rights system (MOE, 2008). Intellectual property rights systems are considered as one of the essential mechanisms to enhance university-industry cooperation and commercialization of research and innovation was examined and incorporated with the interviews fact.

3.3.3 Data analysis method

Qualitative data obtained through in-depth interview were organized and analyzed as the means to triangulate the data examined from the secondary data sources reviewed and cross check on internal validity ; interpreted through sorting into themes , categories and tables (Creswell, 2012: 261-262; Huberman 2003).The use of triangulation there through increases the robustness of results as the findings can be strengthened through cross-validation of multiple data sources (Benbasat et al., 1987).

3.4 Reliability and validity of the research

Tests of reliability and validity of instruments depend upon the chosen approach; In this case, the qualitative approach dictates the application of the analysis. Accordingly, before administering the instruments of data collection, the questionnaires were standardized.

3.5 Research Ethics

The purpose or the objectives of the study were explained to the respondents, and full consent of the respondents was obtained.

They were also allowed to withdraw at any stage when they feel uncomfortable with the issue. As far as the ethical consideration was concerned, the issue of proper acknowledgement of the sources of literature was taken into account.

CHAPTER FOUR

4. Data presentation, analysis and results

This chapter dwells on the presentation and analysis of data and the results /findings are presented based on the developed theme, categories and tables.

4.1 . Development of theme and categories

Themes and categories were developed based on the results of the study in line with the objectives of the study, and the theoretical framework outlined in chapter two.

Table 1. Developed them and category

Theme	Category
Status and approach of university industry government linkage.	Undertaking trilateral initiatives.
Attention and consideration to the helices	Knowledge, Leadership professionalization , organizational culture, conflict of interest, lasses-faire management style
Authority to lead triple helix linkage of UIG	Authority to lead the linkage.
Roles need to play in the whole scenario of innovation	**Government:** Leadership, Policy frame work, Innovation incentive, Social business incubation, Intellectual property right. **Universities:** Problem solving research, Incubation space, Science and innovation park, Patent set up policies, **Industries:** Sponsoring researches, providing training to students, supporting joint innovation and science center, involving itself during curriculum development, establishing common research center
Major area of UIG linkage	Student Intern and externship, Consultancy, Research, training, Sponsoring research work, provide common business incubation center

Challenges to establish triple helix and business incubation	Leadership, conflict of interest, policy and practice gaps, lack of trust and commitment, financial related challenges, institutional challenges and cultural difference
Strategies to strengthen the link of innovation between university industry and government	Incentive and legal condition, practical engagement in problem-solving, publicizing UIG linkage, strategy and structure

4.1.1 Status of University Industry Government Linkage

4.1.1.1. Undertaking trilateral initiatives

As point out prior university- industry -government linkage for innovation requires trilateral institutional convention of innovation actors to realize sustainable development, and guarantee the enhancement of novelty of goods and services. Therefore, giving due emphasis to the linkage of U-I-G can be considered as a startup in the real establishment of triple helix linkage as a principal issue for innovation and business incubation. Then, memorandum of agreement of U-I-G and mechanisms on how to implement the activities are properly agreed among the stakeholders, this depends on the ability to establish the flux helix and create innovation playground space. The interview data result indicates that: Is the national innovation policy comprehensive with U-I-G? "In some cases, the answer is yes", however for the last 10-15 years of the industrial investment trend was to cord "foreign direct investment". (# AAU, MoTI,); is there an action plan between you? "Actually No" usually the incubator is developed within university and the science park and it is very new and nascent trend (# AAU, MoTI, Association, FSMMIPA). Another keen interviewee state that "our collage tried to form business incubation program in 2016, and six students were join this incubation space" and it is already aborted (#AAU). An interview result from the respective director's representative in the university, government and the associations support the above discussions:

Universities form new structure since, seven years ago in particular science and Technology University, in amongst this seven years we pay effort to support and to evaluate the current status and of the university industry government linkage. The additional is how to recover the university linkage and how to approach with the industrious sector specially the privates/association and the government, we are tiring to catch new linkage areas. And after this the university and the

government has to conduct a workshop to make an agreement with the industrious/association sector, then the members were fewer in number and they didn't interested . Another also added that even still there is a link between government firms and ministry offices in positions of consultancy service, curriculum development and capacity building there is no as the expected research and development and innovation linkage with the private/ industries (MoTI, UIL, 2014).
The secondary data, documentary reviews were support the above result: that the Ethiopian university industry government linkage that is UIL proves that government directs the linkage through the science, technology and innovation council, in this range ministry of trade and industry act as a member and the core of the linkage was to establish national capacity(#UIL, 2013, 2014). However, the view of U-I-G Linkage requests universities to create their own innovation ecosystem at national government also support via policy frame works to the private sectors .In critics, Business incubation and innovation claims, and the necessity of strong linkage among the helix were very much critical; Policy and legal frame works should also be coherent; therefore, establishment of incubator movements, science parks, and networks through universities, research institutions, firms and municipalities facilitate the realization of the linkage is noted by (Etzkowitz and Dzisah 2008); Koeller and Gordon 2013) and variables in system theory perspectives undertakes that 'the whole is greater than the sum of its parts' (Johnson, 2001: 135; Hansen, 1995: 9; Barker, Sturdivant & Smith, 2000: 4; Mizikaci, 2006: 43; Betts, 2003: 38).

Paradigm shift to acknowledge triple helix treaty is essential to smooth the playground of the innovation actors. hereafter the popular logic of triple helix and the innovation infrastructure like Science Park, Innovation Park, Technology Park and Business Park are the main location of business incubation organization and innovation attainment; afterward investors/industrialist, traders participate in the student research it may a noble coincidental to students who are those have commercial research idea ; this infers the interface among the inputs to the system, the process and the interaction among the parts will have an effect on the outputs to be produced rather to maximize a laissez-faire version with institutional spheres strictly complicates a reality of U-I-G interactions at national, and regional levels limiting itself to education and research, eschewing a broader role in economic and social development.

Consequently we can summaries, business incubation is mostly none, university-industry-government linkage and the stated technology transfer offices of the universities as well in ministry of trade and industry cannot be employed for policy guidance about network development,

knowledge transfer, the importance of university's role and the incubation of new start-ups; this owners from "a **laissez-faire model"** , industry, academia, and government was in separate and apart from each other, interacting only discreetly across strong "boundaries" and the government would be limited to addressing only those problems that can be defined as market failures, and the downside to this is that it is the system which would make it difficult for the three institutional spheres to interact in a way that would maximize the synergy in the relationships.

Finally triple helix model is required in their normative legitimacy; whereas the nascent Ethiopian triple helix which is bilateral /double helix request to an amendment to trilateral treaty in a national and regional level in the form of interactive helix of U-I-G linkage

2.4.1.1.2. Knowledge, Leadership, organizational culture, conflict of interests.

As indicated above the U-I-G for innovation was inactive from the figure of trilateral interaction to capitalize knowledge economy. Innovation can no longer be assumed to take a conventional linear path parallelism policy, strategy and leadership: results developed from the interviewee stated that the "liable bunch of actors" university –industry- government, were fewer convincingly concerned (#AAU, MoTI) .Why? **Fewer concerned**? "Knowledge, information and professionalization gaps" (#AAU, MoTI, Association). "Universities are unwilling, government also too much bureaucratic" (#Association). "Industries limited to cooperate and provide incubation space in there company or near to the university" (#AAU, MoTI, Association). Why? "Lack to Leadership professionalization" and conflict of interest (# MoTI, AAU); information gap and knowledge about the international situation to entrepreneurial culture in the intermediary organization (# AAU, Association, MoTI). Other interviewee indicated that the "bilateral, lasses faire relationship crafts fewer concern among the actors to U-I-G and their own work overloads (# AAU, MoTI).

Even the players signed memorandum of understanding with Addis Ababa University and Adama science and Technology University in terms of collaborative Research, internship and consultancy service, we have no strong linkage in terms of direct inter-interventionist interactive form of linkage for innovation and business incubation. Associations also confirm we have strong linkage with different collages with faculty wise linkage. University research policy identifies main research areas and it gives detail emphasis on its article to create conducive environment for Academic research and technology transfer. The problem was not the policy to create university

industry linkage but through what is the set-up attention to implementation, academic staff is run into teaching and learning process (AAU, MOTI,).

In the document analysis obtained data result support this double helix complication and fewer attentions: Addis Ababa university research policy, deals with significant matters in the generation and dissemination of knowledge and conducting academic, basic and thematic research and intellectual review as well. In addition to that there is strategy to facilitate university and industry linkage and clearly stated in The Federal Democratic Republic of Ethiopia September No. 3/2013. To this end from the very beginning the Addis Ababa University with Ministry of Industry Cooperation Program (UICP) in February 1986 was in Practical training of students, R&D, curricula and consultancy services. Afterward as one of its strategies to steer the behavior of different actors, MoST has issued a Procedural Directive 2013 as indicated. Higher Education Proclamation (650/2009) desires universities to define their core research areas; rather what the core of the third mission declare the innovation infra-structure incubators and business incubation approaches. Intellectual property IP also considered in the science, technology innovation policy directions and strategies (MoST, 2016) and Intellectual property (IPR) system (MoE, 2008) essential mechanisms to enhance university-industry cooperation.

Literatures also support that the double helix linkage is an appropriate for innovation: traditionally, innovation was conceived in linear term that is the elite science university and government approach; currently, innovation and research benefits from evolving and overlapping relationships between U-I-G. moreover, structurally innovation is a systemic process with a modulation on effective organization's system in which high skills are widely diffused in different areas(Etzkowitz and Leydesdorff, 2000; Etzkowitz and Zhou, 2007); Organizational transformation also causes new challenges, and each spiral is able to find new ideas from the others to solve problems and meet new needs (Etzkowitz 2008).

From the data, interview and the existing document we can analyze that, Addis Ababa University and government tries to form linkage with the public institutions and industries through consultancy service, capacity building and student internship programs with in bilateral relationships, but it seems that there is no strong university industry government linkage in whatever, and in terms of business incubation and innovation with the private industries almost none, and the economic players fewer consideration to the UIG linkage .

4.1.2 Authority to lead triple helix linkage of U-I-G

4.1.2.1. Authority to lead the linkage.

As the theory and practice of triple helix in universal and the transition towards the hybrid triple helix model is seen necessary for nations to benefit from maximizing the synergies between the three actors were interconnected authority to direct the triple helix linkage, Etzkowitz (2003).

The result obtained from the interviewee result "Actually we have memorandum of understanding but I couldn't say that who guide the linkage" (#MoTI). "Ministry of trade and industry is a member for the linkage, so, we are waiting their call" (#MOTI). "We are trying to create a conducive environment between us; however, it was not remarkable (#Associations).Universities were not attempt to advance the laboratory, student recreation area, and university business incubation space to underpinning the economy" (# MoTI, Associations, AAU). Who lead the linkage? "I cannot to say that who are lead because, we are acting here and there."(# AAU, MoTI, Association). "The ownership of the linkage as a partnership government have an oddity to managed and support the linkage" (# AAU, MoTI, Associations, FSMMPIA). "the problem was not laying in chief of leading, whoever innermost lack and academic freedom still the cause to academic turn over like other African countries, (#AAU, Association).

The interview data result indicated that the existing helix in Ethiopia as for the laissez-faire model, governments, universities and industry operate independently as a separate institutional spheres; they side that it is predictable that firms in an industry should work completely apart from each other in competitive relations and are linked only through the market structure .second in practice, the individualistic mentality is higher up and creates a type of heroic entrepreneur, and industries working in their own area, however they can lack understanding and fail to capture the changing needs of their external environment. Third, in the bilateral relationship the ownership /authority to the linkage were merely with government. (#AAU, MoTI, Association).

In secondary data documentary analysis result indicates and support the interview result that: The Ethiopian Higher Education Proclamation number 650/2009 has been proclaimed to achieve the following objectives of higher education, to prepare knowledgeable, skilled and attitudinally mature graduates in numbers with demand-based proportional balance of fields and disciplines. So that, the country shall become globally viable; knowledge and technology transfer consistent with the country's priority needs; ensure that, education and innovation indorse freedom of communication. Moreover, higher education proclamation indicates the problem solving research

direction. To this end , the priority needs of the country to solve its challenges and build its capacity through technology transfer and have an institutionalized system that enables it to carry out planned research and conduct joint research projects with other national and international institutions, innovation and business incubation centers, and industries also the same .

The reviewed Literature also confirm that the interactive linkage of typology is the shared characteristics of the three spheres and states at various stages of development with different natural socio-economic and cultural belief systems have established a trilateral sequence of interactions among governments, universities and industries; and the Helix operation is not coordinated totally by the state, but also depends on the commitment at the local level as well as the inputs of a variety of innovation actors (Etzkowitz, 2002: 11, Etzkowitz 2008).It has also been argued elsewhere that the policies related to innovation systems are often challenged with issues that are both complex and controversial, one attempt to deal with such a complex problem is thus through citizen involvement (Griessler 2012).And the center of gravity of this interaction is inside the university, with a supporting role of industry (Carayannis and Campbell 2009).

Generally, The result from the interview and document analysis indicates that the universities industries and government are in a separated ownership and implementation to interact with the triple helix to solve the socio economic barriers of the community in bottom up way and keeps its own distinctive characteristics and at the same time also assumes the role of the others inclusively, to apply innovation and finding new problem with solution was very limited. Therefore, it demands renew the agreements. And to emphasis on building overlapping and relatively inter-dependent interaction between the three spheres. Hence it needs a deep-rooted exit from the laisser-faire model towards mutual collaborative dealings and linkages among the three major institutional spheres, diverse organizations and disciplines in which innovation policy is an outcome of their interactions rather than a prescription from government or other individuals.

4.1.3 Roles Need To Play In The Linkage.

4.1.3.1. Government

Practical situation of linkage with in different actors, government play a critical role in forcing the U-I-G linkage to innovation inclusive policy alignment through different variables: Leadership, Policy frame work, Innovation incentive and intellectual property right problems are underlined. The result obtained from the interview that “the university leadership competency and commitment level is fewer pioneers since they are in teaching” (#Associations) .regarding the

linkage the signed "MOU" was limited to take a risk of SME industries and business incubation (#MOTI, Association). And "that the cooperativeness of each economic actors are much dispossessed to the intellectual property rights" (# AAU, MoTI, Association). Because "ownership and trust imbalance" (# AAU, MoTI, Association) and the national and regional public research fund, venture capital funds, equity financing for research and innovation activities, research-intensive SMEs was limited". (#AAU, MoTI, Associations), "the entrepreneurial culture with in the central bank of the Ethiopia is a number one barrier to innovation and business incubation" (# AAU, MoTI, Association); "stock and capital market problems that the national government should have to give effort to stock market"(#AAU, Association).

The interview data result obtained from the respective government concerned that the SMEs are the focused and priority area as per the GTP I and II, which policy frame works as a job creation scheme that may be useful to provide poor people a decent source of base income, but does little to nurture innovation-and growth-oriented entrepreneurship and alternatives that have not yet been exploited in Ethiopia. second government shall take part in the contemporary relationships deriving from interactions ongoing between the bubble of universities and industries are resulting in a third hybrid was not deep-rooted ,universities are in basic research, partnership projects between industry and higher education institutions as well as through the joint "capitalization" of knowledge drives financial capital into acquiring ever greater inputs from knowledge through invention, innovation, incubation the sharing of new risks and mechanisms for attracting and sustaining local investment; for the reason that wealth is now create and built up according to new magnitude, this requested to redefined the linkage with knowledge leadership, currently the university industry linkage take in to account by the government through manufacturing industry development , and we are trying to ease doing business even in Africa. Third this thus the level of technological sophistication, the public policies touching innovation related activities, intellectual property protection, fiscal incentives for innovation, and enacting and effectively implementing antitrust and abuse of authority legislation was under question. (# MoTI, AAU, Association)

Document analysis also indicate that ,particularly rewarding innovative business concepts; encouraging graduates from universities and colleges to set up new firms and coaching them with the help of experienced business people; support programs that help to link micro, small and medium firms to larger firms, as suppliers and public procurement with training programs to

upgrade small firms; those functions are expected from ministry of trade and industry to govern and develop manufacturing industry as well the crevice industry (#MOTI GTP, 2014).

Literally, there is some degree of different based on the policy perused by the governments as well as the level of economic development of the country and universities are often included in government economic plans (Altbach, 2011: 7); the state should promote credit lines to stimulate innovation within business and universities/research institutes, and a broader, but not least, invest in the country's education system, based on the formation of intellectual capital of a nation (Magacho, et al., 2014: 5; Etzkowitz, 2008: 63); Moreover, the government can create a supportive environment for financial support from the industries through taxation and other research collaboration activities specifically, the state may take actions in the formation of public policies that promote research and development, foster the reduction of uncertainties and stimulate investment in technological business incubation ecosystem (Etzkowitz, 2002).Incubator models vary widely around the world, but majority of the country funding mechanism through government and non-governmental sources and government grants as well as private foundation university with government Corporation, Tax incentives also a forms of federal government support through triple helix interaction network (Chandra 2007).institutional structure and maturity of its institutions the country shapes the environment for incubation and this holds true in the United States, China and Brazil, availability of capital as well as the structure of financial markets is a key determinant of growth of fledgling ventures (Bhide, 2000, Chandra 2007).Banks are the lenders of last resort for incubators and entrepreneurs in an environment marked by a fledgling stock market and absence of many other funding alternatives (Guerrera, 2005). And by lowering transaction costs of doing business also underlined "gaps" in the system that hinder new business creation and innovation (Chandra, 2007, Dzisah and Etzkowitz 2007 b).

Generally the triangulated data infers the leadership of the actor's millstone were seems in isolation magnitude rather to open space for knowledge, consensus and solving problems related to policy frame works to innovation and business incubation. This thus the level of technological sophistication, the public policies touching innovation related activities, intellectual property protection, fiscal incentives for innovation, and enacting and effectively implementing antitrust and abuse of authority legislation was in effective, In sum, the prevailing framework needs to encourage innovation. Within a perspective of more intense interaction and cooperation between the universities, industries and government helix components rather to a win-win-situation.

4.1.3.2. University

In the innovation and triple helix area, universities are through providing problem solving research, Incubation space, science, innovation park, patent set up policies, common set of priority for linkage with industries are the main variable, the triple helix thesis state that the knowledge infrastructure can be explained in terms of these changing relationships; actions and network among the three bubbles provide input and sustenance to science based innovation process.

The result obtained from the interview and analysis indicates that the current effort of UIG in Ethiopia attempt to "Bilateral agreements"; and the "the progress is not yet fitting for interactive business incubation" this thus industry-sponsored research projects are almost worthless (# AAU).universities "need to initiation from the government" (# MoTI, Association). Actually the universities and the innovation moment was in infant stage (#MoTI). "We are trying to launch the first university intellectual property right policy, Science and Technology incubation center but the university administration in the academic wing make a change on industrial internship, consultancy service Short-term training, structure supervision, design verification, and are common channels used to transfer knowledge what we currently accomplish" (#AAU).Ethiopian universities are characterized by a dual economic system (#AAU, MoTI, Association). Addis Ababa University as a scopes should craft triple helix as a mission (#MoTI). Furthermore, on a more practical level, it is not reasonable to expect that well-educated university academics spend hours in unproductive situation (#AAU, Association).

Data, gained from the university respective interviewee indicates that:

Moreover, universities are expected to cooperate with the international issues and incorporate local contexts through knowledge production and transfer across the globe and "Entrepreneurial University" more closely involved in the transfer of technology and the founding of new firms, it attains a new entrepreneurial identity very much needed. Industry Sponsored Research Projects, technical center to enhance the quality of research by stimulating collaborative research and development projects and strategic partnership was expected from the universities, in line of this, Universities are increasingly being called upon to contribute to economic development and competitiveness.(#AAU, Associations, MoTI)

Secondary data analysis result indicates that the university has clear consultancy service arrangements and is the most effective and widely used network at the moment; and in connection with the annual budget the university allocates limited resource for routine activities; bureaucratic

external challenges and industries don't have trust by the local technology and local expertise (# UIL, 2014).Intellectual property policy, the first intellectual property right policy launched in 2003 proclamation no, and 378/2003. To give legal protection for intellectual property, collection, organization and dissemination technological information contained in patent documents, study analyze and recommend policies and legislation on intellectual property to the government, promote knowledge and understanding of intellectual property among the general public, are the objectives of ministry of Science and Technology Ministry in 2003 and the policy as well. The second IP strategic plan which has been operational since 2006 is also producing some results in such areas as the use of IP to enhance export revenue. Universities particularly implementation of intellectual property right policy is to given Addis Ababa institute of Technology University.

literatures supported, that the moment of the universities have an immense role to reach the third helix, which implies that the parties jointly realize that university business spin-off firms, trilateral initiatives for knowledge-based economic development, strategic alliances between different types of firms, governmental laboratories, and academic research groups together constitute an innovative environment(Etzkowitz and Leydesdorff 2001, Henry Etzkowitz[a],Loet Leydesdorff[b,1]$_{2000}$). According to Etzkowitz (2002) position thosewith the innovation and the establishment of the triple helix representation of university, industry and government interactions, and universities expected to play a leading role in strengthening the relationship; hence, universities take the prime initiative in forging the triadic relationship. This proves that, University is one of the factors for social, economic and political change. In this "entrepreneurial" university and "entrepreneurial" scientist show the changing nature of the universities' mission and organizational behavior in an educational and research dimension (Etzkowitz et al., 2000; Boardman, 2009).

Finally, university industry and government should establish awareness creating meeting, and renew the linkage and post regular follow up through the concerned body, and reinforce implementation power of the existing national policy which enforced the university, the industry to create strong linkage in accordance with national interest, and university, government and industry should have common strategic plan to have a frame work for the desire linkage through crafting triple helix interactive linkage including the community . Universities are expected to respond to the hassles of stakeholders in their surroundings through working in corporation with the government and industry/private sectors. Such changing nature of role of Universities has

resulted in the emergence of a 'triple helix' model that shows the linkage between Universities, government and industry.

4.1.3.3. Industries

The Innovation locality model incorporates physical place as a key element in what is otherwise a variation on the triple helix model of actors (Katz, 2014).

The result obtained from the interview indicates that "industries prefer to find international buyers to expand their sales and profit" (# AAU, MoTI). "For the last 5 years we sponsored a research which is add value to our production" (# Association); another interviewee indicate that "we have no information about what government doing with the university" (# Associations).industries are the test beds of innovation (# AAU, Association). We provide internship to students (Association) and we pay money to consultancy services to university instructors(#Associations).Industries have no capacity as well interest to sponsored research (#AAU, MoTI). Industries should work with academic groups (#AAU, MoTI, Associations).

As we know this reality, it is clear that, the structure dedicated to such bilateral linkages is operating on minimal budgets and it is irregular to create the link but at the movement except industrial internship and consultancy service there is no effective collaborative research and business incubation with the industry, industries also inefficient to the linkage. Second there is no alignment of university and industry joint research and development policy and linkage funding to stimulate the collaboration between industry and university at national level, therefore, enforcement to triple helix linkage is demanded the all parties effort .And perceived that, National policy frame that facilitate the link of university industry and government towards business incubation and innovation technology regulation seems to unproductive (AAU, MoTI, Association)

Document analysis result indicates that the industrial development strategy, which was approved in 2002, is regarded as the country's first-ever comprehensive industrial development strategy and it is recognizes the need for deep institutional reforms of the national institutional system, a quite clear strategic alignment and the government's strong commitment to industrial development and structural change. And the Agreed the stability of the government, which has been in power since 1991, Ethiopia's development can build on a long-term strategy to local private industries. The most Dedicated technology and training centers have been set up to support specific industries .While this strategy, focused on infrastructure and supply-side technical inputs, creates important preconditions for rural development, it has not yet produced an important results. The Industrial

Development Strategy talks mainly of agro-processing and garments as potential entrants. However, the strategy red-top recognizes that low labor productivity seriously constrains export competitiveness. Small and medium enterprises account for the lion's share of non-farm employment in Ethiopia, but operate at very low productivity levels *(# GTPI, GTP2, 2014).*

In relation to this literature argues that "by taking the initiative to develop training and research, the industry may also play a vital role similar to universities" and Companies are directly responsible for innovation and locus of the innovation process because they have the mission to capture the knowledge of science and technology, develop, produce market and distribute the technology or knowledge derived from it, promoting economic development and local levels. From the interview and literature we can understand and summaries that the university gave initial effort to foster institutionalize the linkages with the productive sector by creation of designated office (Etzkowitz, et al. (2007: 14, Magacho, et al., 2014: 6).

Generally the result obtained from the interview and document analysis indicates that the major economic assets are disjointed and the industries also under production capacity. there for it needs publicizing the linkage objective and status parallel to the modification or paradigm shift of the helix and build the capacity of small and medium enterprise, because of most industries in Ethiopia are SMEs, here there is limited capacity to deploy research work with university. And the role of industries in strengthening the linkage with the government and the academic world is immense; industries serve as the training grounds for the university graduate who joins the labor market with the necessary skills and knowledge; in addition to this industries also provide funds for the universities to promote research and technology transfer; Even they may take the initiative to conduct joint research.

4.1.4 Major Area of UIG Linkage

4.1.4.1. Student Intern And Externship

Universities industries and government can create partnerships in varieties of areas which is Students' internship for practical attachment is one major area with the aim of connecting theory and practice opening. Students get various exposures to the practical world where they involve in different research, innovation and technology transfer activities. With this participant was interviewed on the major areas of partnership with the nearby industries directed that the major area of linkage between universities and U-I-G was mainly in "student internship" (#AAU, association). Similarly, "that the major area of university-industry-government linkage was

subjected by students' practical attachments to the industries through internships (#Association, MoTI).

From the interview result concluded, that industries can be viewed as workplaces and polishes the credible of the youths and makes them for employed in the market (# UIL, 2014).

University-industry-government collaborations give self-confidence and practical hands-on experience to graduates and enable them to survive in the global market (Khan&Anwar, 2013: 273). And "by taking the initiative to develop training and research, the industry may also play a vital role similar to universities" and companies are directly responsible for the innovation process because they have the mission to capture the knowledge of science and technology, develop, produce market and distribute the technology or knowledge derived from it, promoting economic development and local levels (Etzkowitz, et al. (2007: 14, Magacho, et al., 2014: 6).

From this we can conclude, if the triple helix configurations of linkage for innovation were not weak, that the three wings of the players can hovering at the same time in a nonlinear parallelism, At this interval the linkage could takes place more than student internship and externship. In addition to this players can open the door for endless transition to innovation in bottom-up, top-down trilateral initiatives. As Etzkowitz, (2003) noted academic-industry government relations are emerging from different official starting points in various parts of the world, but for the common purpose of stimulating knowledge-based economic development. These days, official engagements that facilitate university-industry- Government Corporation are in place, and creating links with industry and government has now turn out to be one of the missions and mandates of Universities across many countries.

4.1.4.2. Consultancy, research and training

The other area of U-I-G linkage was on research, consultancy and delivery of training; in this instant the result obtained from the interviewee confirmed that "research, consultancy and training were takes place through the university" (#AAU, MoTI, Association). Similarly universities also provide different consultancy services for the industries found in their bunches (# AAU, MoTI).And "joint research project is highly stimulated by our university" (#AAU); and somehow industries were unwilling in allocating budget for this purpose (#AUU,)."That there is a joint research projects with the industries" (# Associations), "the means to strengthen the linkage between the three parties, universities offer scholarship to industries" (#Association).Industries joining with the university research and development issue is below average" (# Association).

Why? "Limitation of industry participation with universities on repetitive case" (#MoTI, Association). In the other way "culture" from both sides and lack stipulated fund for business incubation hub and research" (#AAU, MoTI, Association).

As we know that the university-industry interactions also involve varieties of activities among this, staff exchange between Universities and industry; delivery of training to industry professionals; consultancy services ; joint and contract research projects; universities are interested by consultancy services more. Therefore, they side that, the shared research infrastructure (labs & equipment, business incubator and technology parks); academic entrepreneurship (start-ups, spin-off companies), and commercialization of IP (licensing patents) are the main areas was insignificant, industries also reluctant and not well informed (#MoTI, Association)

Theoretically that officials identified universities as a source of commercially valuable intellectual property (IP), would raise the innovative performance of industry and policies designed to encourage university entrepreneurship through giving universities more powers to make decisions on the exploitation of IP arising from research and through providing financial and political incentives, these policies were put forward at a time when funding for university research was declining, which increased pressure on universities to seek research income from industry and other sources (Smith 2016.P.99).

Generally it is possible to summarize that industries are not fully aware of the benefit of such research/ innovation test bed and incubation assistance to their company rather prefers the comfortable area of regular mission, universities also love their comfort zone. As a result, it can be inferred from the discussion above that research, consultancy and capacity building through training were identified as the second major area of linkage exist .

4.1.4.3. Provide Business Incubation hub

From theoretical point of view, promoting the culture of entrepreneurship, business incubation which encourage innovation and academic business spin offs are demands from government and academia and need to work together to identifying the policy level measure and implementation strategy for developing entrepreneurial ecosystem at university level which facilitates entrepreneurial activities and innovation. Moreover, government also needs to develop policies which encourage new startups based on the results of research and directly supporting new ventures through specific regional programs (Fini et al. 2012; Fini et al. 2009).

The discussion result gained from the interviewees indicated that "local industries are very traditional in production system" (#AAU, Association, MoTI) and the national innovation strategy also disjointed within the linkage players" (# AAU, MoTI). "intellectual property right legal frame and ownership is very weak" (#AAU, Association, MoTI); and "attention" to business incubation and innovation was limited*" (*AAU, MoTI, Associations).

The interviews indicate "The role of policymakers is to introduce governance systems to make technological interactions and communications possible between us". Second "we are on the path to build technological capability while importing appropriate, important and effective foreign technologies." in the other way the parties attention was limited to innovation and technology development ,even the national innovation policies in place was dismantled (# Associations, AAU)

Secondary data Results of analyses indicate that the vision of the country is the key driving force for capitalizing on human capital and research-intensive activities for enhancing knowledge production capabilities of the country. As publicized in the national development plans (GTP I and GTP II), a more knowledge-intensive approach to development is more and more suitable the main path for bringing sustained development and thereby bringing the country into a middle-income country by 2020-2025. The universities' role in this regard is accelerating human development and technological capacity building and ensuring its sustainability. And the national Science, Technology and Innovation (STI) P policy (MoST, 2016) this policy was formulated in 2012, visualizes the creation of a national framework that will delineate and support how the country will in future search for, select, adapt, and utilize appropriate and effective foreign technologies as well as addressing the establishment of national innovation system (FDRE, 2012).

In Innovation literature, innovation is specifically industry-located concept that the means through which firms master and get into practice product designs and manufacturing processes that are new to them, if not to the universe or even to the nation" Firms' internal resources are augmented by those from different environments, including universities and government laboratories, as well as other firms (Archibugi and Iammarino, 2002; Dosi, 19ane 88). And that innovation should be understood as a system rather than as a series of isolated events (Bunnell and Coe, 2001; Shapira, 2004).In developing countries, the triple helix is said to be a normative model that countries aspire to through putting the basic elements in place and in all developing countries, the essential triple helix elements exist and the missing component is often the lack of a coherent strategy to integrate

the fundamentals ingredients necessary for socio-economic development. (Etzkowitz, Mello and Almeida, 2005).

In Ethiopia, new universities were built and these new universities enable institute researchers acquire on teaching responsibilities, with students contributing to research as their assistants to reduce overdependence on foreign sources of knowledge and training for survival and renewal (Etzkowitz and Dzisah, 2007b). Critics have argued that the university systems in most developing countries are academically oriented and industries are either non-existent or too weak and governments too much bureaucratic to take part in respective roles envisaged through the triple helix model. To this end many countries reconstruct the economic system universities to realizing that knowledge holds the key to a fast-tracked development and reconstruction, harness triple helix actors through its emphasis on the role of universities in economic reconstruction(Etzkowitz and Leydesdorff, 1997).

Generally, in this study linkage through innovation and business incubation was almost none, it was dominated by the usually verities of linkage like training and internship. In a better way at the moment to realize to become a middle income nation after few decades, quite to coming up our indigenous efficiency advancement; however, unpromising to invention until we build the necessary capacity the only fit alternative is to focus on adaptation of foreign technology.

4.1.5 Challenges Hinder Triple Helix Linkage

In this consequence of innovation, innovation is the reflection of many actors interaction in the spirals, in this study the three helices particularly economic assets universities, industries and government are need to link. There for leadership related, conflict of interest, policy and practice gaps, lack of trust and commitment, institutional challenge are the core variables.

4.1.5.1. Leadership, institutional challenge and conflict of interest

Result gained from the interview indicates that “there is a problem to knock at the doors of the industries frequently” (#AAU). Why? Industries lack some degree to aware new things (# AAU) industries also blame that universities were fewer attention to problems related to the “industries”(#Associations).Moreover, the “academicians need instant incentives for what they are doing with the industries” (#Association). “Conflict of interest” were reflected by the players (#AAU, MoTI, Association).

As indicated the above interviewees’ data indicates that, there is an encounter on the part of the universities and the government to make interaction with the industries on a continuous basis. And

they side that the universities do not yield solving the problems of the industries as their top priority program through research, business incubation and technology transfer. Why this contradiction occurred? "Lack of competent and participatory leadership" to U-I-G linkage .second "Ideally, there is an exchange of skilled manpower". However, "in real cases, there is no exchange of professors to evaluation of internees in the industry" .third there is a recognized, lack of practical skill on the part of the instructors, unwillingness of the industries, cultural differences with the industries, that is geographical distribution of the industries and lack of information on market gaps. In addition to this the U-I-G linkage needs clear interaction of activities; but in the real case of the existed linkage was nothing more than the coordination of students' internship, plus of conflict of interests in their leadership (# AAU, Associations).

Literature directs that universities, industries and government linkage in many developing countries have been challenged inaccurately rooted cultural and institutional barriers, which take time to overcome (Guimon, 2013: 3). Thus, U-I-G linkage needs a well-organized /structured institution in terms of using human, material, financial and other related resources (DiMaggio and Powell, 1983; Tolbert, 1985; Greenwood and Hinings, 1996; Too et al., 2003) sited in (Brundin, 2014) Governments are rooted in institutional environments and they seek to match regulatory demands and normative, as well as moral prescriptions and expectations, in order to obtain and keep legitimacy and to strengthen the university industry linkage numerous institutes and clusters were established in a country. triple helix and the forth helix like have a big character to connect people from different sectors to bridge gaps through bringing together different views, generate consensus and balance conflicts of interests; at the same time integrate skills and enable people to develop their own technology Initiatives (Callon, 1992) and 'networks of innovators' (Cusumano and Elenkov, 1994; Freeman, 1991).

Generally, Ethiopian bilateral UIL, relationship with university-industry linkage needs an amendment at national and regional context. Where the major ministries responsible for business incubation and Innovation in Ethiopia .thus that the Ministry of Education, Ministry of trade and Industry, Ministry of Innovation and Technology, Ministry of Finance. These ministries indorse specific policies, strategies and programs to support the growth and development of local industries. Therefore, realizing the importance of incubation program and innovation as a platform to support triple helix linkage of U-I-G and to regulate the national research and innovation priorities and systems.

4.1.5.2. Policy and Practice Gaps

Ethiopian government designed several policies related to university industry linkage from 1986 ministry of trade and industry and Addis Ababa University to know. The result obtained from interviewee that "policies and guidelines were not able to come up with the expected results" (#MoTI, Associations). "Economic development of the country could not be realize"(#AAU, MoTI, Associations)."Policy in its place, and university tasks, as usually conceptualized was fewer acknowledge triple helix" (#AAU, MoTI, Association,). "Stockholder's reluctant approach" (# MoTI, Association).

As indicated in the quotation, the university demands its instructors to engage in research and technology transfer activities actively; however, they are busy through teaching. This is what actually contradicts with the expectation of universities mission and government roles in the policy level, specified that the government demands the curriculum offered at the university level should be relevant, up-to-date and problem-solving researches and innovation (# UIL, 2014). And that the curriculum needs revision, hence entrepreneurial education could in faculty wise or at the university level. Moreover, students couldn't have adequate prerequisite to internship in the industries, and poor supervision through the university respective. Finally they side that, the issue of curriculum development challenged the actual implementation of policies in government and universities. Quiet more, from the interview that, policy-practice gap was the major challenge that hindered the progress of U-I-G and the triple helix acknowledge through all players of the economy (#AAU, M0TI, Association).

Secondary data results indicate that strategies to navigate the behavior of different players, moST has issued a Procedural Directive for the Linkage of Education and Training, Research Institutions and Industries (# 2013, 2014). According to this directive, Universities are required to interact with industries in terms of ensuring the development of students' skills through practical trainings and to undertake need-based research that solves problems related to competitiveness of industry. To this end, many of the universities have opened university-industry linkage and technology transfer offices under the vice president for research and technology transfer to facilitate their interaction with industries in terms of training, research and innovation.in parallel the former ministry of industry also establishes university industry linkage office in their place. However, university leaders and staff shows that the national STI council and the national forum for university-industry linkage are not well functioning and their impact in enhancing the link between the industry and

universities is minimal. Similarly, the university-industry linkage and technology transfer offices of the universities are not well developed to the level of attracting the industries through relevant and quality research and innovation activities and business incubation.

Theoretically and according to the logics underpinning national and regional development, the predominance of the relationships between universities industries and government (state or municipal) and specific local activities like local technology transfers, the development of human capital and networking, in conjunction, determine better overall results by "triple helix" linkage (Smith & Bagchi-Sen, 2010). More attention to Endogenous driven development is boosting local stocks of intellectual capital and support to institutions such as higher education policy practice and facilities, research centers, incubators and scientific parks with the purpose of aggregating the value of resources ranging from the agricultural sector through to all the different fields of the economy (Etzkowitz 2003).

From the interviews and secondary data triangulation, it is possible to summaries that the actual problem avails in associating the gaps between policies and practices; It needs to well-acknowledged and continuous discussion to deepen the understanding of the existing university-industry- government linkage, and for the paradigm shift of the third mission of U-I-G linkage.

4.1.5.3. Lack Of Trust And Commitment

Evolving trust and commitment between universities industries and government will strengthen the interaction of the helix spirals and take third mission in each sphere for innovation. Institutional spheres are also seen as selection environments, and the institutional communications between them act as selection mechanisms, which may generate new innovation environments and therefore ensure the 'regeneration' of the system (Etzkowitz and Leydesdorff, 2000; Leydesdorff, 2000).

The interview result indicated that the major challenge for the linkage was the lack of trust and commitment especially on the parts of the industry (# AAU, MoTI, Association). Industries "market structure" and "Government's inadequate support structure" (#AAU, MoTI). Industries search for "immediate solution from the university (#AAU). Universities should capacitate the students with "applicable skills and knowledge "our country needs competent graduates who can solve the problems of the industry in the coming years(#MoTI, Association).

As pointed out prior, industries egger to open their gate for the researchers and suggest solutions to their problems using their own financial bases, universities also need to participate when the industries provide budget and develop trust. In the other way industries pursue universities are

skillful of solving their real problems but this is not applicable and formally formed network among them and it make them untrusted each other. In addition to this they side that, the of absence of agreeable contact to the applied world due to the previous traditional education system, And there was no such a strong custom of providing practice-oriented learning trend and advancing the mission of the university to enter practical and applied research, research commercialization, incubator and incubation organization to reduce unemployment through creating different business parks and technology parks those who are qualified students to work, and intellectual property right was not yet applicable (#AAU, MoTI, Associations).

Secondary data analysis indicates that the Intellectual property (IP) rights system (MoE, 2008) Intellectual property rights systems are considered as one of the essential mechanisms to enhance university-industry government linkage and builds trust among them. A review of the documentary proofs show that the issue of intellectual property rights policy is a recent phenomenon in the Ethiopian context, which drawn back to establishment of the Ethiopian intellectual office in 2003. Since then efforts have been made to utilize the IP law as an instrument for technological innovation.

However, results of the interview data show that the IP policy is not yet implemented to the Universities. The major challenges gaps include absence of institutional IP policies in public higher education institutions, research and development organizations as well as public enterprises, and lack of awareness of the value and importance of IP protection is also mentioned as the problem among business/private sectors/associations' enterprises. Therefore, it is possible to understand that the problem of university-industry-government linkage was challenged by lack of trust and commitment between the two and the fact or the reason behind no overlay mission for them and the country.

This is supported by other keen interviewees that the major challenge we "lack of trust and commitment" that the University lecturers perceive immediate benefits like financial incentives. "We do not have trust that we will be funded tomorrow. On the other hand, industries need to work with foreign professionals at the expense of the domestic ones and they should start to train ours today for healthier future (# AAU, Associations).

Finally a close relationship between the universities and investing know is the seed of the future was indicated as a means to develop trust. U-I-G in Ethiopia constrained by lack of trust and commitment of the economic parties in tamping the integration and the existing university industry

linkage at ministry of trade and industry was not regarded from the roles of the university-industry-government perspectives.

According to (Ranga & Etzkowitz, 2013: 237; Leydesdorff, 2000: 243; Etzkowitz, Dzisah, Ranga & Zhou, 2007: 14)Government may help through setting regulatory frameworks, providing start-up financial benefits and resolving issues related to intellectual property (IP) rights. Similarly, universities may take initiatives to conduct problem-solving research and disseminate their research outputs to the society, placing incubation space, consensus space and business spin-offs and in the same manner, the industry may collaboratively work with the academia by sponsoring researchable projects and establishing joint innovation and science centers to encourage business incubation and innovation.

4.1.5.4. Financial Related Challenges

The result obtained from the interview indicates that the "budget" allocated is specifically, to prepare basic researches (#AAU, MoTI). And the "maximum, universities do not go beyond prototyping their own research outputs" (# AAU, MoTI, Association), and "industries do not allocate budget for research, and common facility area for business incubation and innovation hub" (#AAU, Association).This was once more confirmed by the industries representatives associations themselves each industries that as they do not have money allocated for this purpose only (#Association, FSMMPA).

On top of this interviews indicate that the assumption behind this problem was that both students and university instructors were training on the industrial machines and services. However, universities do not pay for these services so that they expected free support from the universities. second that the university instructors and students train on their facilities, which should be taken as an opportunity and industries consider this exposure as an opportunity for university, so that they were not willing to pay additional expenses for this. To this end, "university was not willing to afford such expenses, Taking into account the advantage of training student internees and staff externship, industries need the universities to conduct research, provide consultancy services and training free of charge (#MoTI, AAU, Association).

Secondary data result also confirms that the documentary evidences display that the government spending on education has been increasing over the past years, and the share of higher education budget from the total education budget has been reasonably high compared to the lower tiers of the education system (MoE, 2016). And the insufficiency of research funds has been impeding the

research and innovation capacity of universities. The contribution of industry/business/Associations in funding university research and business incubation center is almost non-existent in the Ethiopian context.

The reviewed Literature indicates that the appropriate settlement of U-I-G helices have a great emphasis through the state requires declaration of adequate funds from the very beginning (Adeoti, 2009). Therefore, strength of U-I-G partly depends on the extent to which these facilities are fulfilled, if given welcome from the government, university and the industries. This actually calls for looking middle ground by the government where the cost issue could be considered through a tax deduction and other inter-linked intervention strategies.

Generally, results confirms that the government budget is limited to research and innovation, and there are no intermediary funding agencies at national level that focus in stimulating innovation and business incubation, university research and linkages with industries, business sectors and the community at large.

4.1.6 Strategies to strengthen the linkage

4.1.6.1. Incentive and Legal Condition.

The Ethiopian government has announced and applied consecutive legal frameworks, plans and strategies within the framework of the 1994 education and training policy with the purpose to navigate the deeds of higher education institutes. The highest national legal and policy frameworks that directly or indirectly influence the link between universities industry and governments for innovation and business incubation.

In line with this, Interviewees demanded to onward their remarks to avert the problems related to the linkage for innovation. Thus, incentive and legal application were recognized as the strategy to reduce challenges and barrier of strengthen UIG. In support of this, importance of motivating industries in creating interaction as the government should take the initiative to capacitate the universities or subsidies the industries, maybe, overtax deduction, innovation incentive, accreditations. And there should be a "legal entity that could properly oversee the issue of UIG at the national level plate form". In other perspective there were unwilling industries for student apparent ship (# AAU, MoTI, FSMMPIA).

Secondary data result confirms that the activities of UIL were given to MoE and as it is in-charge of expanding and controlling universities (FDRE, 2015: 8636) and strengthening UIL was also given to both ministry of trade and industry and MoST as stipulated in Article 21(6) and Article

23 (6) of the same proclamation (FDRE, 2015: 8609 and FDRE, 2015: 8615).However, from the documents of MoST, it is possible to observe that industries have a responsibility to receive student from the universities, though the guideline lacks what measures should be taken in case of rejection by the industries(#MoST, 2013: 19).

To sum up, literatures of the triple helix and innovation underlined that the independent configuration of lasses- faire approaches are affect individual, group and organizational innovation because of independency and the employed policy framework and legality gaps; Hence how society is organized on a macro-level in different functional systems like politics, economy, media or science and which relationships are sustained between them: (Luhmann, 1988). As Willke (1996) is arguing, the modern systems theory has become one of the main paradigms within social sciences because the highly organized society. University-industry -government linkage for innovation and business incubation process, different interacting variables will 'the whole is greater than the sum of its parts' (Johnson, 2001: 135; Hansen, 1995: 9; Barker, Sturdivant & Smith, 2000: 4; Mizikaci, 2006: 43; Betts, 2003: 38). This implies the interaction among the parts will have an impact on the outputs to be produced. As a result, the three parties are expected to play an unparalleled or nonlinear parallelism role in an integrated and co-operative manner for their mutual benefit to bring about the desired results. Therefore, the concern indicated by the interviewee seems relevant as this UIL/ bilateral agreements may create encounters and inaccurate support to industries, innovation incentive and lack legal conditions.

4.1.6.2. Practical engagement in problem-solving

Universities are the sanctuary of knowledge and expected to relieve the problems of the industries and the society at large and it raise trust and helping hand the interaction between the three actors *The result obtained from the interviewees "universities" should take the prime initiative to win the tie. Second that the university should be ample and willing to work with the industries and government institution, third Universities should be a model with more input for innovation high initiative and would strongly work to make industries alert of their mutual welfares. Forth, they side that, in some cases, industries do not know the capacity of the universities. Strengthening this, "professional organizations, which will reduce the cost those local industries, spend for professionals from abroad. And laboratories used in universities are different from the one that was found in the industries. The gap was explained by one of the interviewee as follows: We usually train our students on our labs; whereas, industries use their labs at the time of employment and*

this brings difficulty to graduating students to join the labor market; consequently, training students in those labs is important in different fields. The interviewee further explained that industries and universities should be established in close area to enable them to share resources to bring mutual benefits among them. (#MoTI, FESMIPIA, Association).

Secondary data analysis document reviews' indicates that The Research and Technology Transfer Governance Framework of Ethiopian Higher Learning Institutions (MoE, 2016) is a new policy framework that describes vision, mission and objectives of research, technology transfer framework including opportunities and challenges. A framework concerning technology transfer, university-industry linkage and directions to strengthen research and technology transfer in the Ethiopian Universities are among the focus areas of this national framework. Under this framework, institutions will be reinforced over provision of funding for innovation, perhaps on a competitive basis. This shows the intention of the Ethiopian government to facilitate the science and innovation endeavors of the country.

On top of this, universities should establish similar workshops to industries as much as possible to increase the problem-solving capacity of the industries, rather on theory and subject matter teaching and learning process, the same is true of ministry of trade and industry doing industrial investment more on local and interactive approach, as a good deal industries /private sectors. There for at a national approach government acts as a public entrepreneurship and venture capitalist in addition to its traditional regulatory role in setting the rules of the game.

Moving beyond product development innovation then become an indigenous process of "taking the role of the others" and encouraging hybridization among the institutional sphere to organizational innovation.

4.1.6.3. Publicizing UIG Linkage

In developing countries, universities and industries have less interaction to create partnerships, overwhelmed through their traditional roles of teaching and learning at the expense of research and community service activities (Adeoti, 2009: 378).

The interviews, result indicates that, industries do not really identify the importance of universities in solving their problems through research and bringing new innovations and business assistant incubators. They argues, it may this requires continuous considerations and sensitization on various U-I-G activities. Furthermore, Awareness creation and sensitization programs should be further strengthened to increase university-industry-government interaction. Then Industries keen

to open their door for the universities students and researcher academicians, and government play a major role in a mediating role rather to controlling and considering themselves as an inter-linked interventionist in strengthening the partnership. "Conference could be organized at national, regional and university level" vigorously contributing industries will be awarded and certified. (#AAU, MoTI, Associations).

The reviewed literature shows that, the dynamics are nonlinear and the recursive terms have to be declared and transformations within each of the helices and reconstructions can be considered as a level of continuous innovations under pressure of changing environments (Etzkowitz, LeydesdorffResearch Policy 29 (2000) 109–123). In the other way helices are increasingly shaping each other mutually; co evolution may lead to stabilization along a trajectory. If more than a single interface is stabilized, the formation of a globalized regime can be expected and can be disturbed by events at a next-order system's level Schumpeter, 1939; Kampmann et al., 1994.Institutional Transformations, Michael Nowak and Charles Grantham open the dig out about the impact of the Internet on incubation as an institutional mechanism for technological innovation. According to Luís Farinha, 2014 Society seems more complex molecular biology itself, depleting the model of the double helix so far valid model to explain the DNA – Desoxiribo Nucleid Acid, essential for understanding the structure and activity of the DNA and heredity. On top of this, triple helix for innovation is now required to explain the relations between the academy, industry and government. This implies that university- industry linkage demands sensitizes to all players as a triple helix for the reason that of industries mainly derived from the community in a normal way. Internal and external information which is inclusive to innovation is very much requested that technology push infrastructure for instance government institution, intermediary organization like financial institution. Hence the interaction should change their configuration to create knowledge based economic development; university industry linkage should have to transform their pattern with internal and external environment.

There for, publicizing the existing and the emerging university industry government linkage for innovation and economic development are significant and very critical phenomenon for the country, aware and acknowledge the triple helix can smooth the real helices and the track to add other helices of forth.

4.1.6.4. Strategy and structure

Organizational structure followed the strategy; policy procedures that run down the organizational hierarchy with clearly defined roles and responsibilities drive and determine the success of U-I-G. The structure should intensely show the network of communication with the government, university and the industries. Likewise, it should also show its structure within the university and the industry.

The interviewees result indicates that the structure was not coherent strategically:

On the need for establishing a separate office in charge of U-I-G: from the idea of the government, several efforts were made to create a good link of university industry and government. Secondly, it is significant to establish isolated agency, commission or national and regional innovation organizer with the helix known by its name, which is directly concentrating on U-I-G linkage. Furthermore, "We have no information where is "University industry linkage office. Forth Ministries those are having university industry offices were changing the U-I-G office to organizational linkage/OL which is to connect governmental structure only, U-I-G were not acknowledge as well as inadequate attention in their structure. (# AAU, MoTI, Associations FSMMIPA).

Secondary data analysis indicates that, at national level, the Ministry of Science and Technology (MoST) has been established by proclamation No. 691/2010 as one of the most important regulatory bodies in the areas of science, technology and innovations and organizing national science and technology research and development programmes based on the country's development priorities; harmonizing science and technology development activities and national research programmes; and facilitating interaction and cooperation among government and private higher education and research institutions and different industries with a view to ensure research and technological development are among the duties and responsibilities of the Ministry. Similarly, the government has also established national STI council and the national forum for university-industry linkage which are coordinated by MoST and the national council for science, technology and innovation, while the other to be formed at the zone level based on the growth corridors (MoST, 2013: 12).

According to Permitting to M. Brännback et al. 2008, single characterization of an innovation system seems to be missing. Interrelated institutions, that produce, diffuse, and adapt new technological knowledge such as industrial firms, universities or government agencies (all macro-

level variables)(Nicosia, 2002). terminology includes ‘science parks’, ‘research parks’, ‘technology centers’, ‘innovation centers’, ‘incubator centers’, ‘start-up initiatives’, and ‘business parks’. Classically, governmental agencies, the city itself and the surrounding municipalities as well as the universities have been identified as strong actors in setting up these institutions (Carsrud and Ellison, 1992;(Etzkowitz and Zhou 2007; 1992, Etzkowitz 2008; Porter 2001; Yuzhuo Chai 2014), Yuzhuo Cai 2013; Etzkowitz and Leydesdorff 2000, and Etzkowitz 2002, leydesdorff 2018).

Finally, university industry linkage UIL office structure could not be appropriate to post triple helix structure and business incubation organization, meanwhile governmental agencies is the place to see business angels and venture capitalist it might to financial support for startup business and affected by thus structural slow-moving problems and normative blockages of organization. Therefore, policymakers, thus, the university, private sector, should take their share in creating strong linkages and partnerships essential to improve the economic growth of the country and it requires a robust national platform, framework to impose strong linkage among the three players through crafting with emerging interactive logics and clear spiral structure in a tripartite level was suggested as the strategy to strengthen the linkage and innovation hub.

CHAPTER FIVE

5. Summary, conclusion, and recommendations.

5.1. Summary

The objective of this study was to examine the status and approach of universities industries and government linkage for innovation in terms of business incubation at ministry of trade and industry. This research employs qualitative methods to address the issue and directed through a conceptual model constructed from the review of the literature in this narration research type.

In this regard government as a policy maker attempt to create policy and legal environment with a transformative leadership role, policy frame work provide innovation incentive, Social business incubation formation and IPR setup and moderating all related situation. Industries also through having Sponsoring researchable projects, Provide training ground to students, Support joint innovation and science center, in addition to funding policy of the government, industries were crucial role to supporting innovation and business incubation. Universities also Provide Problem solving research, creating university business Incubation space, consensus and knowledge space, Patent set up initiative to policies, the institutional policies were integrated to create desired university industry government linkage for innovation and business incubation.

Data was collected from 24 in-depth interviews at ministry of trade and industry, Addis Ababa University office of VPRTT, different associations located in Addis Ababa and small and medium manufacturing industry promotion authority.

Results for the current status of the linkage in the case of ministry of trade and industry were in its infant stage, through the approaches of double helix which is a bilateral partnership as a lasses fair regime. Challenges or factors related to the linkage was mainly on institutional blockages of normative situation, leadership, conflict of interest, policy and practice gaps, lack of trust and commitment, financial related challenges, and cultural difference were the main factor to triple helix linkage .

In order to crafting the real triple helix, linkage commitment of the leadership with the actors couldn’t reliable, and crafting university industry government linkage doesn’t become priority attention through the actors, industry owners also give fewer emphasize to local technology and expertise. Because of their market structure and to profit. In the other way some industries haven’t information about the linkage with university and government and they didn’t know the capacity

of the universities. Accordingly the university leadership also focuses on routine activities and bureaucratic issues. Instructors focuses was in traditional teaching and learning process. As a result the status of the three players in creating the link as a triple helix was very low, and it is not acknowledged by all economic actors.

Policies, strategy and implementation situation similarly, the recommended stake holders to university, government and the industry did not put functional mechanism and institutional modality to implement the policy into practice. For example the non-existence patent right policy in the university is one of the major factors amongst others to motivate the university academic staff to engage in the linkage of triple helix. And there was no pure structure, communication and networking with in different culture come together. The leadership of the university didn't give attention to create the desired linkage, government also too many bureaucratic, industries also unwilling. There was an ownership and belongingness problems among the three actors: That the policy makers and stack holders were reluctant for the linkage. Because of the existing linear relationship of the actors was building conflict of interests to their leadership, knowledge, information and professionalization gaps also underlined; So that, the bilateral linkage was leading through government. But in triple helix logic there is not at all single actor having a leading role but who were having more input for the linkage are significant.

In practical situation university has a consultancy and capacity building linkage with the public institute than industrialists; national science, technology and innovation policy was not thriving with the helix logic and business incubation almost none. And the student intern and externship linkage were practiced with in difficulty. Common consensus by means of triple helix treaty among the actors to innovation incentive and implementation of the policy was almost none: capability to creating conducive innovation environment to industries almost poor, since academicians cannot engaged in problem solving research and new technologies, innovation infrastructure. Government also too much bureaucratic and controlling rather than to form innovation incentive policy, posting different science and technology parks, raising entrepreneur culture to intermediary organization like banks and financial associations.

5.2. Recommendations

As problems identified, and from the reviewed literature, the following recommendations are forwarded for the universities industries and government linkage for innovation and business incubation practice.

5.2.1 Improving leadership and institutional challenges

The current status of linkage was found at its infant stage of double helix system which is a bilateral interaction in ministry of trade and industry in terms of business incubation: Therefore,

- University government and industry should be actively engaged in creating institutional frame work to implement national policy and institutional policies, mainly the integration of these three parties need to be considered.
- Improving this weights fit, competent, knowledgeable, experienced and collaborative leadership from them, principally from the university and government. This calls for the professionalization and knowledge based leadership to reinforce triple helix of U-I-G through continuous discussion between the players; it demands different policy tools of innovation and business incubation to vigor the helix outcome. Moreover, university industry and government leaders should build wisdom of ownership, belongingness, trust and commitment to promoting UIG linkage.
- Organizations should embed in institutional environment, to match these regulatory demands normative as well as moral prescriptions in imperative to attain and keep legitimacy. The goal is to outlooks of "required" appropriate or suitable behavior with in some socially contracted system of norms, value, beliefs and definition; because, when an organization is observed legitimate, it is fewer exposed and more trustworthy in the eyes of their viewers and desirable resources likely to be "existing" to those organizational players seem appropriate.

5.2.2 .Paradigm shift to the UIG linkage

Transforming the character of universities from teaching to entrepreneurial universities, in which, universities take their third mission and the enormous share of the country development program and activities through applied research, innovation, university business incubation and academic business spin offs, technology incubator and technology transfer activities is significant. From this study, universities industries and government linkage as a double helix was overwhelmed by students' intern and externship.

Therefore:

- The triple helix actors should intensely change themselves from bilateral, lasses-faire approach to interactive system of linkage; Act together in the development agenda of the country and renew the agreement as per the triple helix metaphor, and developing the rules and procedures.

- Capacitating universities through involving students, industry employees, university instructors and researchers on innovation and problem-solving activities through their practical engagement is toughly recommended.
- Business incubation is looked-for sleepless night for the university as well as government; realizing amenities such as ICT centers, establishing joint lab centers with the industries, research and technology incubation centers, business parks, science, innovation and technology parks, social or cooperative business incubation center from their synergies or knowledge hub is highly recommended
- To this end, the formation of these centers and accomplishing amenities may request massive currency that could be obtained from government treasury, support of industries, universities internal revenue and through projects from external sponsorships by strengthening the triple helix linkage can pull resources; private sectors also practically engage with the academia and the policymakers to help them.

5.2.3 Associating policy-practice gaps

This study confirms that the existence of policy platforms in linking universities with the industries and the government. However, the actual implementation was under the expected.

- To improve these challenges, it is strongly recommended that solving policy, strategy and structure alignment and related problems are looks significant as UIG was given to three different ministries (MoE, MoST, MoTI,MoIT). It is understandable that there are activity interdependences and overlaps state to different development agendas at the country level.
- However, to solve this challenge, it seems relevant to create distinct Agency, commission or national and regional innovation organizer from the industry, ministries and the universities to solve the ownership and task conflict at the same time can vigor fourth helix.
- Additional, significant point that consideration and attention is the need for applying legal execution and awareness to unwilling industries; they should not turn back investigators and student internees from the gate.
- Government might consider their contribution through a tax deduction, duty-free and other new innovation incentives by strengthen the triple helix. More attention to local capability driven development and higher education policy practice and facilities, research centers, incubators and scientific parks with the purpose of aggregating the value of resources ranging from the agricultural sector through to all the different fields of the economy.

5.2.4 . Networking

University-industry government linkage is all about networking. In the era of globalization, university industry and government have no more room to remain isolated from one another.

- Universities would generate a business with universities outside the country and across the globe and participating triple helix conference in worldwide university. Industries also create co-authorship cluster by their tangible products within the country, it is also suggested that creating network from intermediary organization like banks, NGO, telecom, to support business incubation and innovation activities in the country.
- Geographical detachments of the industries can geographically agglomerate by cluster approaches with in the nearby universities. This requests regional innovation strategy from the triple helix mainly industrial promotion through cluster and academia and think thank with government support.

5.2.4 Publicizing the triples helix of UIG.

There are a forums and conferences through the national innovation council, however, it is a national level. Whereas triple helix UIG requested strong public media coverage and scientific media and journalism rather to public relation.

- Therefore, publicize the linkage is back bone of triple helix and creation of knowledge based society through different publications, newspapers, pamphlets, websites and various electronic means.
- Triple helix might add the forth helix to collect innovative idea from the formal and informal society and assisting by business incubation organization at national and regional level.
- In addition to this, awarding and acknowledging better performing universities and industries at the national level will increase their concern to promote UIG and as a curriculum scientific journalism might include.

5.3. Conclusion

University industry government linkage is a dynamic mechanism in crafting innovation and country's economy in the competitive advantage of the global market. It is a wealth to stand-in economic development and conveys universal change in the livelihood of the citizen over business incubation, innovation and technology transfer. Regardless of this solid dispute, U-I-G in Ethiopia particularly in ministry of trade and industry was at its infant stage and business incubation almost

none , universities also mostly demanding through traditional roles of teaching and governments also more of in controlling role rather to overlying, the approaches also lasses faire configuration .Consequently, triple helix linkage between the three actors was not fully recognized on trust, factual, real treaty and commitment basis yet. To this end, the relation between the three actors was limited to students' internship, consultancy, training and fewer joint research projects with bilateral partnership concept.

Likewise, the existences of perception difference among the actors, information gaps, knowledge and normative situation between them were other difficulties. Those problems generate less attention among them. Finance and that the unwillingness of local industries, facility problems to business incubation. Moreover lasses faire regime particularly in government bodies, Absence of clear structure to coordinate the triple helix for innovation organizer or agency rather to administer centrally through the council; the existence of policy-practice gaps also identified which is increase the mortality of industries. On the other hand, these challenges could be an indication to diagnoses the government to provide attention for policies, strategies and execution, knowledge and skill. Still universities are expanding universities and number of industries is parallel thriving ground for creating linkages. Accordingly, to exploit these openings adequately, it was recommended that transformative and collaborative leadership and management capacities through encouraging universities to shift their roles to their third mission, connecting policy practice-gaps, creating strong and continual networking system, discussing ownership related and contextual inputs, solve the intellectual property right issue to increase inter- organizational trust and to advance linkage were requested .

Triple helix actors shall moving away from the isolation configuration, that is : universities have created technology transfer/licensing offices with practical and reality show problem solving and press offices/media centers might change the configuration internally with scientific journalism to establish a point of contact, to improve the standing and visibility of the University to society . Government also moderate the factors which related to leadership and finance for innovation process, Triple-Helix linkage shall move forward from the lasses-fair isolation to necessary triple-helix model, and up to a "Quadruple Helix" model involves financing organizations which are needed to foster revenue growth and research and innovation commercialization: Besides, regulatory environment, tax incentives and provision of public venture capital" specifically, the state could take engagements in the formation of public policies practices that promote research

and development, by means of revealing the private sector uncertainties with the universities research and stimulate investment in technological business incubation ecosystem. Strongly argues the viability of the 'go-it-alone' strategy to innovation is no longer convincing.

Generally UIL in Ethiopia were suffering from institutional challenges, described in the form of lack of internal policies and strategies alignment in relation UIL and lack of just about solving the problems of the industries on the portions of the universities. Similarly, the existence of background difference and information and knowledge gaps amongst universities and the industries were other drawbacks. Communication problems, information gaps, geographical scattering of industries and the existence of cultural differences among universities and industries were found to be an encounter. To this end , finance and awareness related challenges, the unwillingness of local industries with local expertise , work overload of university lecturers, business incubation facility problems, lack of far-sighted and committed leaders from government ,university and industries , and the absence of clear and comprehensive structure, the presence of policy-practice gaps were the challenges identified. The other persuasive difficult related to UIL was lack of trust and commitment between the actors.

However, it could likewise be concluded that these encounters could be prevented to openings as the starting point to UIL through policies, strategies and directives. Quiet more, the number of universities in the country is expanding and government establishes UIL offices at their places, and the number of industries is parallel thriving retreat space for creating linkages. Thus, to rap these openings adequately, it was recommended that improving leadership and management dimensions through working out, encouraging universities to shift their roles to their third mission, associating policy practice-gaps, creating strong and sustained networking system, and arranging different and publicizing linkages up to forth helix .

Finally for further study University-industry government linkage for innovation has wider areas of research in cooperation with in traditional mission that is areas of student internship programs. Moreover, research might be done on areas of national innovation systems comprehensiveness, the process of technology transfer between universities and industries and to the new areas of formation of academic business spin-offs and other business and technology parks.

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Appendix

Interview questioner

Dear interviewee

This interview questionnaire is part of my masters of Science research: In University- Industry-Government linkage of innovation through Business incubation at ministry of trade and industry: therefore, I kindly, invite you to take part of this study.

The aim of this study is to examine what is status and approach of university-industry-Government linkage, innovation, Business incubation and future economic sustainability of the country. The findings of the study will be benefit universities, industries and the government by suggesting some feasible strategies for strengthening university-industry government linkage of innovation strategy with policy alignment of the country.

You are kindly requested to explore this question, as genuinely and honestly as possible and according to your personal views, Position and experiences. No expected risks are associated with the interview of the question, which is only used for research purposes. The interview question will take approximately 25-30 minutes to complete. Your participation in this study is voluntary.

Sector_____

Designation _____Signature _____

Appendix (I)

Interview guide for ministry of trade and industry participants

1. What is the status of university-industry- government linkage in terms of Business incubation in Ethiopia particularly in your organization?
2. Are there any emerging models for developing and transitional economies of Ethiopia particularly in your organization?
3. What is acknowledged as to triple helix worldwide?
4. What are the major areas of linkage through triple helix?

4.1. Intern and externship

4.2. Consultancy service

4.3. Joint research

4.4. Business incubation

4.5. Innovation park, Science park/technology Park

2. Have you think that Government leader's commitment affect/promote the university-industry Government linkage and innovation development? How?

4. How do you evaluate the mission and competency of the university leaders/managers in creating and supporting triple helix linkages?

5. Is there a perception difference among university leaders, government policy makers and the private sector/industrialist in relation to the linkage of UIG in Ethiopia and your organization?

6. Why Industrial leadership and government has have fewer consideration to integrate with the university?

6.3. information gap

6.4. work over load

6.5. goal and mission difference

7. What role play by the university leaderships to establish business incubation and innovation practice the same too industry and government?

8. In general terms, how do you evaluate the level of UIG in Ministry of trade and industry?

9. How do you determine the capacity of ministry of trade and industry (MOTI) in establishing plat form, policy and strategy as a third mission, guiding, supporting and UIG of innovation in Ethiopia?

10. Is there any Agreement between you? If yes what are the evidence? If no why?

11. Is the ministry having institutional policy and guide line to create University industry government interaction and innovation? If yes would you give evidence or practical action plan? If no why?

12. How do you see the implementation of those institutional policy and guide lines?

13. How do you allocate your recourses for strength university industry government linkage for business incubation and technology transfer?

14. Is there any incentive mechanism for business incubation and innovation?

15. . What are the major solution/strategies to takes place innovation culture in a country and your organization?

Appendix (ii) Interview guide to associations

1. How do you evaluate the relation of your industry with the universities and government?

2. In which areas better links with the universities, industries government?

2.1. Business incubation

2.2. Intern and externship

2.3. Consultancy service

2.4. Joint research

2.5. Innovation park, Science Park

3 What are the challenges that hinder promotion of university industry government linkage as per your organization? Will you explain from the perspectives of the government, university and your industry/organization?

3. What strategies are there to promote university industry government (UIG) in current contexts of Ethiopia? Explain from the point of view of the government, industries, and universities?

4. Are the policy and strategy is flexible for the linkage? How?

5. How do you think that the linkage between the three players can better be improved in terms of innovation and business incubation?

Appendix (iii}: interview guide to university

1. Are there any emerging models for developing and transitional economies of Ethiopia in terms of innovation and business incubation?

2. Do your University/ department linked with industries and Government? If you say yes, would you provide evidence? If you say no, why?

3. What is your opinion about infrastructure and facilities for Business Incubation, Innovation in AAU?

4. Is their national policy frame work to stimulate university -industry Government linkage?

5. Is their Signed memorandum of understanding/agreement between the UIG? If you say yes, would you provide evidence? If you say no, way?

6. Is there clearly stated research policy to enhance research and development?

7. How does your organization manage issues related to intellectual property rights and innovation?

8. Does the university allocate sufficient innovation space, consensus space for Business Incubation work? If you say yes, what is that? If you say no, why?

9. What do you think about Joint Research Centers (JRC) program in university that facilitates university research out puts to be used by the industry?

10. What is your opinion about Intellectual property right? At national level? Is there any rule regarding IP?

11. What are the challenges of the link between university industry and towards Business Incubation?

12. What do you think about the mechanism that can be used to strengthen the link between industry and Government in your collage /University to activate innovation?

Appendix IV.

Document analysis dispute management

1. Number of triple helix seminars and simulation among the actors at large.
2. Signed memorandum of understanding/agreement between university industry and government.
3. Documented Joint publication between university- industry and government
4. Knowledge and consensus moderation negotiation leadership with the private sector and universities.
5. The interaction of the mission on R&D and innovation
6. Guidelines to assist of concerned division in their relations with university industry and government
7. Documented tools of Rewarding individual researcher and industries
8. Documented tools about Number of innovation transferred to industry and established business incubation hub: - from government, universities. Industries
9. Projects introduced in collaboration with industry and property right issue initiatives.
10. Number of project funded by industry.
11. Documented tools to Entrepreneurship and innovation financing system