SCHOOL OF GRADUATE STUDIES ADDIS ABABA UNIVERSITY INSTITUTE OF EDUCATIONAL RESEARCH

# THE LINK BETWEEN UNIVERSITY AND INDUSTRY:THE CASE OF AAIT

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## Declaration

I declare that the following thesis put together entirely by myself, under the advisory of Dr. Mulu Nega and has not been accepted in any previous application for degree. The research and background work leading up to the thesis was carried out by me. All sources of information used for this thesis are specifically acknowledged.

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This is to certify that the thesis prepared by Abrham Sertse, entitled The Link between University and Industry: The case of Addis Ababa University, institute of Technology (AAiT) and submitted in partial fulfillment of the requirement of Degree of Masters of Arts in Educational Research and Development compiles with the Regulations of the University and meets the accepted standards with Respect to originality and quality.

Signed by the examining Committee

Examiner _____signature_____ Date_____

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Advisor _____signature_____Date_____

## List of Abbreviations

| | |
|---|---|
| AAiT | Addis Ababa institute of Technology |
| AAU | Addis Ababa University |
| CSA | Central Statistical Agency |
| EEPCO | Ethiopian Electric Power Corporation |
| ETC | Ethio Telecom Corporation |
| HEI | Higher Educational Institutions |
| MOE | Ministry OF Education |
| R & D | Research and Development |
| S & T | Scientific and Technological |
| TVET | Technical Vocational and Educational Training |
| UIL | University Industry Link |
| UIP | University Industry Partnership |

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**The link between University and Industry: the case of AAiT**


## ABSTRACT

*This study is aimed to analyze on the state of linkage between university and the industry taking Addis Ababa Institute of technology and industries found in Addis Ababa. The study employed mixed approach. There were 12 respondents from AAiT and 11 respondents from the industries found in Addis Ababa. Data were collected from these respondents using Questionnaire and interview and analyzed with simple percentage calculations. The major findings of the study revealed that there was an infant level of linkage between Addis Ababa Institute of Technology and industries in the areas of academic and research support. Moreover, the research documented that this linkage will lead to producing graduates fit for industry, relevant research that can also solve industry problems as well as increasing productivity and service quality of both ,technological productivity leading to improved performance, reduction in training costs. There were barriers for strong linkage which were connected to knowledge gap between the two actors and the absence of policy framework as a means to improve linkages. On the basis of the findings it is concluded that a link between the two actors indeed exist but at an infant stage. The instructors found in the institute are found to form their networks with the industry via consultancy and training while the University did not take any step to utilize the personal link created with individual instructors. The result of this study implied that the need to provide training for all relevant stakeholders;Government,industry managers and Higher education officials about the importance of University- Industry linkage and policy frame work that help them to work in collaboration.*



**Key Words:** University, Industry, Industry-University Linkage

# Contents

# Chapter One

# Introduction

## 1.1 Background

Development will bring enormous and increasing changes in the living standards of citizens in a nation. The pattern of economic development of nations is the product of historical, cultural and other circumstances peculiar to the nations involved in the process. Underlying the process there are certain forces that are central to the growth process for every nation. The forces are size, quality and organization of the country's productive resources (Gill, 2004).

Any production process requires the existence the factors of production. Bradford and Kent (1994) classified such factors of production as labor, natural resources, tools, implements and other capitals. The combination of such inputs will produce outputs, goods and services that are socially desirable.

The factor of production, land is limited in supply while the other factor, labor especially the unskilled one can be found in excess depending on the level of population growth of the country. According to Gill (2004) population growth can have positive, negative or neutral effect to a nation based on the economic, social and academic context of the people of the country. Peoples in their economic and social processes of growth, invent different technological and scientific products, the nuclear energy, synthetic materials, etc.These changes are the results of learning which people invested as the human capital.

Higher institutions, universities and polytechnic institutions are the major contributors in the process of human capital development. According to David and David (2010), universities play

roles for the attainment of sustainable and balanced social and economic development of a nation via educating students for employment, production and to enhance productivity.

Countries that are experiencing progressive growth for the last fifty years are nations investing in higher education considering it as a key factor for national progress and international competitiveness .Governments in such countries had been successful in providing and expanding their educational system based on the human resource needs of the economy (David and David, 2010).

In the nations that understood the importance of higher education institutions in transferring education and creation of knowledge the states and the universities set strategies to create link and relations to the industry. They invited the industry and employers to participate in the higher education processes at different capacities.

Developing countries particularly the least developing ones are suffering from enjoying the advanced outcomes of economic development. They are in a vicious circle of poverty, unable to have a technologically developed production systems. The problem of such countries, according to Gill (2004) does not understand the problem rather it is the commitment to do something to attain such goals. Besides this, the modern economically underdeveloped countries are suffering from other obstacles to development.

It is argued with many policy makers and scholars that education focusing on science and technology will help a nation to promote development via adopting and applying technologies which are made and used by the developed countries and to bring new innovations that can be relevant to the national context.

According to Arbo and Paul (ND), innovation is the capacity to learn and adapt to new conditions or it is linked to interactive learning process that involve many organizations and processes. Innovation is not a single process rather it is made of discrete steps from discovering and invention to commercialization and diffusion. In the process apart from industry and trade activities public authorities and education and research institutions are also the role players.

To this end Etzkowski and Lydsdroff (1995 and 2000) proposed a triple helix model for transforming society into science and technology-based, University- Industry –Government as the three actors for such structural development in the knowledge based economy ( Loet, 2012) .

Human capital investment is an outlay in education and health by the public or private to have a healthy and skilled manpower that can operate in the economic system. Investing in higher education is therefore a means for securing economic development through providing teaching researching and outreaching so as to transform societies in to a knowledge base (Andrew, 2008).Outreach of Higher Education Institution (HEI) involves integrating university activities to society and economy African universities even though forced to demonstrate their roles they are not comprehensively pursuing their mission, due to various reasons (Jhon, Terahynn and Margux,2012) .

Ethiopia, as an underdeveloped nation, is suffering from a seeming endless poverty. The government of Ethiopia according to its educational directives with an Agricultural Development Lead Industry economic policy is working for the alleviation of poverty from the county. For the commencement of its objectives the government is investing huge amount of money for the expansion of higher education and middle level TVET institutions (MOE, 2008). But the process

of the delivery of education and the qualification of the instructors in delivering lessons appropriate to the labor market especially those of TVET programs is under question.

Higher education and vocational training processes are criticized for their lack of initiative in adjusting their curriculum and modes of delivering education as per the industry and labor market demand. The industries found in the market criticized higher education programs as highly focused on knowledge transfer and they did not give space for practical market oriented trainings. This creates a demand supply imbalances in some countries and resulted in labor market imperfections (Braham, 1997).

According to MoE (2008) higher education programs and curriculum was revised after a close examination over the cause. It states that the higher education program is diverted into the training of scientists and engineers with a 70 % composition of the graduates and it also states further that this was based on the analysis of manpower needs of the country. The leading economic development program of the country is giving a greater attention to the development of the agricultural sector. These may seem that there are no driving forces that enforce the nation to shift its higher education programs training of scientists and engineers with a 70 % composition. Besides, graduates from the streams of science and engineering are accused of inexpert for the skills required by the industry (Mulu, 2011).

According to Mulu (2011) in Ethiopian Higher education, theory manifests over practical education in the case of science and technology education. The educational inputs and processes for quality student learning are constrained by many problems. These problems include inadequate preparation of incoming students; poor qualification and competence of teaching

staff; poor quality of teaching, learning and assessment; inadequacy and poor quality and utilization of facilities and support services.

Therefore the purpose of this paper is to analyze the interrelation/link between higher education and the labor market (industry) taking the case of Addis Ababa University Institute of Technology.

## 1.2. Statement of the problem

The government of Ethiopia has shifted its higher education placement policy to focus on science and technology with the intention to enhance the link between training and economic development .In line with this Ganguli (2007) states that universities in most of the countries in the world are expected to contribute, to economic welfare and the by ensuring investments in Research and Development (R&D) to enhance technological development and applicability of them locally so as to increase global competition of a nation. Ethiopian institution of higher education and universities are also expected to work for the realization of such goals. Therefore, the purpose of the paper is to examine the current university industry link in enhancing economic development via the training of skilled manpower taking AAiT as a case.

The research questions are

1. What is already known about the link between AAiT and industry?
2. What is the status of the link between university education and industry at AAiT?
3. Does the university (institute) management, instructors assume the country will get benefit from the partnership, if so in what areas? What are the challenges they face in creating the link and what opportunity they observe when linking?

4. What are the enablers and constraints for linking university frameworks with industry, in the case of AAiT?

## 1.3. Objectives of the study

The major objectives of the study are therefore

1. To identify whether the universities are working with the industry in collaboration, if so in what areas do they collaborate and at what extent are they working for the realization of the objectives of the link and implementation of the government higher education policy.

2. To identify whether AAiT participate the industry in the process of the evaluation as stakeholders of the activity.

3. To assess whether the methods of teaching in AAiT are proficient for training labor desired by the industry and to make the Ethiopian economy knowledge based.

## 1.4. Scope of the study

The study took analysis of the existing level of linkage between Addis Ababa Institute of Technology and Industries found in Addis Ababa. As one of the actors in leveraging the Institute-Industry linkage and provider of fund for public institutions, government and other stakeholders in the process should be included in this research but when this work was conducted there was no institute established for the purpose.Therfore the analisis is restricted to focus on the two actors.

## 1.5. Limitation of the study

This is a case study focusing with the analysis of linkage between AAiT and Industries engaged in the employment of engineering graduates that are found in Addis Ababa. So, the paper cannot be taken as a generalized study to show the pattern of linkages found between Ethiopian HEIs and Industries in Ethiopia. The major limiting factors that hindered the researcher to take more samples from both entities are financial and time constraints. Lack of respondents' willingness for cooperation is also the other limitation of the paper.

## 1.6. Significance of the study

The study will give information about the current situation of the university industry link in Ethiopia and create awareness about the potential benefits and opportunities of strategic alliances between higher education and industry. It will also serve as an input to policy makers and higher institution curriculum development officers. It will also give insights about the perception of actors towards the current manpower planning (supplies) to the future labor demand.

## 1.7. Organization of the Paper

This research paper is divided into five chapters .The first part is a discussion of the problem and background about the issue. The chapter constitutes introduction, the statement of the problem, the objective of the study limitations of the study and its significance.

The second chapter is the review of existing literature related to the topic. It presents the issues and experiences of other countries relating to theories, paradigms in linking universities to Industries. The third parts of the study discuss the methods and procedures used in the study utilized techniques for data collection and research methodology. The fourth part is the presentation of the analysis of the study.

The fifth chapter is the summary of the findings, the conclusions of the study, and the recommendations.

**Operational Definitions:**

- ✓ ***Industry:*** For the purpose of this research work, 'industry' means various organizations institutions and business enterprises, which carry out regulation, production and manufacturing activities.
- ✓ ***Institute:*** For the purpose of this research, 'institute' refers to Addis Ababa Institute of Technology.
- ✓ ***Link:*** used intercangableay with collaboration and partnership

# Chapter Two

# Review of Related Literature

## 2.1. Education and Manpower Development

Development is a change that leads nations to improvement and progress in both the economic and social aspects. According to Hogendorn (1996) the process of development involves transformation of the socio- economic system that includes structural institutional and qualitative changes that expand countries capabilities. The social development referring the human development should have an impact for reduced poverty, inequality and environmental health (Getachew and Demeke, 2001).

National development without the development and improvement of the people living in the nation will lack the principles of equity and economic development. Today, distributation of food, potable water, health services and infrastructure, sanitation and education are the parameters to measure the economic development of the nation.

Manpower or human resource can be defined as the total labor force available for any particular kind of work. It is the bulk of human beings with the relevant skills, energies, talents, knowledge and attitudes that can be committed towards the production of goods and services. The skills knowledge and attitudes can be acquired in many ways. It can be acquired informally from experience and insights or formally from education. According to Chiyere and Joseph (2010) human resources refer to people, humanity, and society with all its aspirations, needs and capacities. Manpower as an economic resource is the aggregate skills and attitudes resulting from the provision of education and training. Such training is usually designed to equip a labor force with the capacity to plan, organize and carry out economic process when properly allocated.

Formal education systems are structured educations that have a preset policy and objectives .The objectives of formal education according to Grinol and Marshall as cited in Anatoli Propoi (1978) is to educate specialists for specified professions and jobs in specified time period.

In developing countries, human resource development is tied to education because it is seen as the path leading to development and developed country status. The ultimate aim of the human resource development is achievement of economic advancement through the provision of relevant education and hence the production of the right combination of human resources (Chiyere & Joseph, 2010).

Human capital development is a spending on the human capital to increase personal competences and knowledge of the economic manpower and which is called human capital investment. Investment in education is the major human capital investment. Through education the human capital is believed to increase human beings levels of skill, problem solving abilities, productivity and productive abilities. This in turn will lead to an economic development of a nation (Andrew, 2008).

There are two models in manpower planning according to, Ivanilov and Petrov (1971) as cited by Chiyere & Joseph (2010) they are:

i. Educational planning model

That emphasizes education as a process of training specialists for the supply of manpower.

ii. Manpower planning model

In this model the basic objective is training specialists taking recruitment and promotions as controls of development.

There are certain relationships in the process of formal and non-formal educations or between education and training. But if one relates them with regard to the supply of manpower for specific needs one can raise a question on how much is required to train and educate from the points of views of general education and on the job training. (Lyons, 1967).

Developed countries are the major investors on their human capital. But with regards to employment for higher technical posts the graduates from universities are not necessarily employed to cover posts. University education is not necessarily the condition to fill higher level posts. Whereas in developing countries it is the government that is responsible to invest for the expansion of post secondary technical and higher educations.

Regarding their investment in education for developing countries donor institutions have placed great emphasis on primary for many decades and, more recently, secondary education was considered in their development assistance to Sub-Saharan Africa. They have neglected tertiary education as an added means to improve economic growth and mitigate poverty. As a result enrollment rates for higher education in Sub-Saharan Africa are by far the lowest in the world. Currently, the gross enrollment ratio in the region stands at only 5 per cent. Because of a belief that primary and secondary schooling are more important than tertiary education for poverty reduction, the international development community has encouraged (Johnson, 2004).

For decades, African states neglect the relevance of higher education even they suffered from lack of global funds. Many African countries struggle to maintain even low enrollment levels, and the academic research output in the region is among the worlds lowest. The development and expansion of Higher education in Africa has suffered from reductions in World Bank's worldwide education-sector spending which was 17 per cent in 1985 to 1989. But from 1995 to 1999, the proportion allotted to higher education declined to just 7 per cent. (David, David, and Kevin, 2006)

Recently, World Bank and major donor governments have begun to reconsider their exclusive focus on primary education and are now giving their attention to secondary and tertiary education so as, to balance poverty reduction and growth promotion within their development assistance strategies. This shift of consideration according to David, David, and Kevin, (2006) opened opportunities for a further development for higher education in Sub-Saharan Africa and some African countries set innovative policies to strengthen their tertiary education systems

Therefore, for supplementing of a further development in the Higher education sufficient understanding of the positive effects of higher education on economic development process has to be created and addressed to national policy makers and donors is required from scholars in the area of education.

## 2.2. Higher Education

Higher education, tertiary or continuing education plays a necessary and an increasingly important role in human, social, and economic development (Sutton, 1998; Escrigas, 2008 cited in Andrew, 2008). Higher education or tertiary education in this context is about empowerment

and raising the quality of life where people can continue to develop their knowledge and skills .HEIs include a wide variety of universities, vocational and technical colleges, amongst other formal, non-formal, and informal institutions (Andrew,2008).

The roles or mission, governance, finance of higher education and its contributions to national and industrial development are discussed in subsequent parts.

### 2.2.1. Roles of Higher Education

Education looks at the general development of students that will give them a wide range of opportunities and choices to prepare them after graduation while industries look for technicians and employees with specific skills who will fit directly into the system.

Globalization changed the purpose and orientation of education in many countries. It also creates the need to expand the higher education sector. In the globalized world expansion of higher education is perceived as a necessary condition for a country's growth, it helps to promote faster technological catch up and increase economic output (Varghese, 2009).

Higher education institutions are centers for education and research. Development initiatives and the need to industrial development in nations are driving countries to expand higher education. Some of the pressures that induces the expansion of for higher education according to Varghese, 2009 are

- The move towards the universalization of secondary education, which increased the number of candidates eligible to enroll in higher education.

- Increase of employment opportunities for university graduates especially in the private sector.

- Recognition

A 2005 Northern Illinois University publication cited the following as motives of higher education.

- To create quality workforce by growing, training and attracting the finest talent
- Support business and industry
- Improve teaching and learning from pre-school to graduate school
- Disseminate research and Promote technology Transfer
- Promote livable communities and
- Employ diverse workforce

In contrast to the above roles of higher education, according to Shils, (1997) the following ten contemporary social developments are factors weakening the commitment of universities to their historic mission

- expansion in size, "massification"
- increased demand to provide public services
- politicization of academic work, the growing intrusion of governmental constraints
- expansion of bureaucratic administration
- reduction of financial support from government
- distortions due to the quest for publicity
- obsessive assessment of academic performance by research productivity
- disaggregation of universities as communities and
- demoralization of intellectual life are raised as the

According to him if universities are allowed to operate in such situations they will remain with the name University and will end up with nurturing and inculcating the moral and intellectual

standards and aptitudes indispensable to research; they will cease to deal with fundamental problems for their intrinsic interest.

The overall objectives of higher institutions are to qualify people on how to think, perceive and act in life.Kluczynski, (1984) as cited in Mesfin,(2008)states that the purpose of HEIs according to Kluczynski (1984) should be qualifying people personally, socially and morally not only to work but also to live, not only to adapt to situations but also to create .

While contrary to the above objectives, in the sub Saharan African countries technical educations are state investments, these state sponsored trainings especially those given at the tertiary level are designed to respond to the demands for most costly skills but lack quality and responsiveness to the labor market needs (Johnson, 2004). Mesfin (2008) argued about the lack of originality and continuality of systems of educations in developing countries and he mentioned it as a cause for failures of educational systems. He stated that educational programs in developing countries are copies of other countries and they tend to follow experience and trends of hosting nations and this resulted in a waste of skilled manpower and educated unemployment.

A well organized education system, according Birhanu (2007) is the one that prepare a better educated labor force that can attract globalized finance and investment.Inorder to have this, the school should previously determine the needs, desires and values of the target group and make the necessary adjustment to meet the needs of the target group more effectively and to satisfactorily supply what the client require.

The major client of higher education systems is the industry. The industry needs employees who are competent and skillful for the success of industrial goals. Industry expectations are also echoed through sound interaction, particularly the requirements from new recruits who are

expected to be orientated to industrial disciplines, job descriptions within the workplace with industrial practices.

In the developing world, universities are mainly degree-awarding institutions, with inadequate budget for research. The widespread problems of universities that are found in developing countries are directly attributable to the poor preparation for both teaching and research, which adversely affects the quality of instructions, as well as the output of research. For achieving excellence in teaching and research, the scientific and technical staff in universities has to be provided with more working facilities and time. Furthermore, a high level of motivation and the requisite conditions for research may create conditions for achieving excellence in teaching and research (Qurashi and Kazi, 2010)

In the majority of universities there is no tradition for research and technology-development; where basic research is conducted it often has no relevance to the needs and requirements of the country; and the high-level Scientific and Technological (S&T) manpower cannot perform effectively unless proper back-up services are provided by sub-professional manpower, which includes para-engineering, para-medical and para-scientific staff as well as manifold increased skilled craftsmen (ibid).

In some cases and areas scientist and engineers are lagging from the existing industrial practices. Some of them are facing limitations in implementing their findings when they are working in the schools. Many countries have established research and development corporations, to serve as an important link between laboratory research and industry to reduce the limitations of scientists and engineers working in the laboratories via developing pilot-plant scale. Commercialization of know-how developed in various research institutions, promotion of innovations and financial aid,

bridging technological gaps in the industry, and technology-transfer and marketability are its major objectives (Qurashi and Kazi, 2010).

Due to financial and other statutory factors related to governance and regulations higher institutions in many developing countries are not functioning ell in the commercialization of their research and technological innovations. In the next section issues related to finance and governance of HE is discussed.

### 2.2.2. Finance and Governance of Higher Education

Higher Learning Institutions are institutions of education and research, in pervious time's where basic research manifests applied and other research they are perceived to be isolated institutions run with government spending. Nowadys, in Europe and most of the developing world although there are private universities, majority of the universities are state-owned institutions. In the United States, alongside state universities some of the best-known universities like Harvard are private. There are many private universities in Japan, Thailand and the Philippines. Since the 1950's, the distinction between public and private universities has gradually diminished in the developed world (Shawkat, 2002).

In the US, there are more than 4,000 accredited higher education institutions enrolling over 15 million students and conferring in excess of 2 million degrees a year. In Canada higher education system is run mainly on a provincial basis, with every province in Canada having exclusive rights to make laws in relation to education. There are over 90 universities in Canada of which only 10 are private. Singapore has two fully fledged public universities and two fully fledged private universities funded by the government (Stanfield, 2011).

Financial sources for publicly established and run universities are acquired from the states. For instance, universities in the United States acquire about 3% of their gross national product, those in Hong Kong and Singapore where, like the US, over 3% of gross national product accounts for their higher education (ibid).

Governance of HEI since most of them are run by the public held by publicly assigned mangment.The assignment of managers in the institutes is guided by public policies. In some countries HEI governors enjoyed certain freedoms of autonomy. According to David, David, and Chan, (2006) in some countries, highly centralized policy making on higher education restricts the autonomy of universities and politicizes them, thus subverting the learning experience in response to political objectives. Policy centralization also makes it difficult for universities to be responsive to changes in knowledge, the labor market, and economic development. In other countries, meanwhile, a lack of centralization and system oversight allows fly-by-night private operations to fleece students or provide them a low-quality education at a high cost, a minimal return on their investment.

The problem of higher control is observed mainly in least developing countries Cameroon, Madagascar, and Tanzania, are examples of countries where governments supervise many aspects of universities' operations. In Benin and Tanzania, the government appoints senior university managers. In Cameroon, the Minister of Education retains supervisory authority over universities. The Ministry of Education in Madagascar appoints all faculty members, sets salaries, and determines working conditions, which links faculty members closely to the political system (Jhon, Terahynn and Margux, 2012).

Legal environments for higher education in Africa vary widely. Some countries keep public universities under the wing of government. Others grant them freedom to manage their own operations. Still others allow private universities to be established. In many countries, there are no laws governing higher education, a reflection of the tendency in much of the region to neglect the issue in policymaking.

Regarding fund allocation for HEI findings from a study conducted in 31 African countries for their inclusion of HEI expansion in their PRSP revealed that all countries except Tanzania make some reference to higher education in their Program, only three Cameroon, Malawi, and Zambia consider it a way to reduce poverty. Just two countries Cameroon and Ethiopia, plan to increase tertiary education funding, with a further six explicitly planning to decrease funding(ibid).

In order to liberalize their activites HEI should have to strive for additional sources of funds. Arbo and Bnnworth,(2008) with regards to this, raised the issue of how to get adequate and stable funding is a major concern for the HEI's freedom and ability to reform in significant respects and they propose useful lessons such as secondary sources of income, job security and teacher training.

Commercialization of academic research is considered as an alternative means for secondary source of income. Calling industries to the universities and looking for corporate R&D funds serves universities to get alternative sources of revenue.

### 2.2.3. Challenges of Higher Education found in Developing countries

Issues related to inadequate materials and facilities (having lower resource), Overcrowding, having lower fund, Brain drain, Low levels of teacher training and pay, weak infrastructure and institutional management, Lack of flexibility and being elitist following Western based out-dated

methods of instruction are challenges facing many HEIs in developing countries. The problems they face affect the institutions by diminishing their ability to teach, conduct research, and formulate and implement service projects (Andrew, 2008).

## 2.3. The Industry

Industry is a collection of firms that are engaged in the provision of activities for profit. Industries can either be service or manufacturing and they are grouped in to large, medium and small scale. The size or scale of business in an industry can be measured in various ways like:

(i) Investment on plant and machinery

(ii) Employment generation

(iii) Investment and Employment

(iv) Volume and/or value of production

(v) Volume and/or value of sales

Qualitatively industries can be classified based on ownership of the business is in the hands of an individual or a few individuals, Management and control, Technology adopted and scope of the business (Bradford and Kent,1994).

In most of the times small-scale industries are owned and run with one individual in sole proprietorship or it can be with a few individuals in partnership. While large enterprises can be owned by an individual or in groups they will be managed by corporate governors, Board of members or assigned administrators.

Classification of industries by their size varies from country to country depending of the investment allocated, employment generated and sophistication of technologies utilized.

### 2.3.1. Roles of the industry

In most of the cases, major employer of the skilled manpowered trained and graduated from technical and higher education is the industry sector especially the private sector. But these employing industries are keeping their complain about the competencies of graduates. According to Majudar, (2008) the perennial and persistent cry of most of the industries in the Asia Pacific Region is that TVET graduates turned out by the system lack in the requisite skills, knowledge, attitudes or values to meet their needs. In effect, pre-mature competencies possessed by the new workforce are feared to affect productivity.

India is the third largest country for its possession of skilled manpower. According to Quarshi and Kazi, (2010), the S&T manpower in India was about 2.5 million, the third largest in the world, next to USA and USSR. As a result of this large stock of qualified industry fit manpower, besides meeting its own requirements, thousand of qualified Indian scientific workers are currently working abroad. (Qurashi and Kazi, 2010).

Graduates from higher education institutions are the employees in the industrial sectors who helped the technological advancement and national development. Therefore, industries are required to work in partnerships with higher education institutions.

A whole-of-industry university approach will be required to secure future skills needs under partnership. Skills formation strategies are long-term processes that help align skills supply, workforce development and business strategy through the collaborative action of industry, government, education and training sectors (Majudar, 2009)

The complexities at the work place brought about by the rapid technological changes, paradigm shifts in education and training and the growing demand for skills training, call for harmonized efforts to reverse the acute skills shortage in many developing countries. Industry-institute

interaction allows exploring endless possibilities in working in synergy and deriving a new focus to address socio-economic and technology-driven challenges.

One of the challenges in the present times is the rapid pace of change of technology which makes skills obsolete at greater pace before everyone else could learn from them. The excessive pace of technological changes has emphasized the need to integrate technological knowledge and skills in education and training to expand lifelong capabilities of a knowledge-based worker. It has been observed that the 50 percent of computer knowledge irrelevant within one year, technological knowledge become obsolete in three years; specialized vocational knowledge will expire in five years and higher education knowledge in 10 years (Majudar, 2009).

Changes in technologies are responsible for the dramatic changes in the structure of wages and employment for the last decades (Eric.etal, 1999). Current innovations becomes causes for the increasing complexities at work, which lead to the growing need to adapt to new innovations in the market and adopt the technologies that provide utmost efficiency in machine operations. In most of the technologies nowadays operating systems and manuals for machineries and production materials are computerized and software driven. This imposes pressures to both the industries and their manpower to look for further updating of profiles and competencies (Ibid).

Empirical evidences can also witness about the return to higher educated workers as higher. This led higher ability students to choose to invest on general education and workers with lower ability to choose to invest on technology specific skills. However changes in technology made their skills obsolete, this obsolescence create an inequality in returns to their abilities. This will lead workers to fall in choices on either to follow on an on the job learning or to invest on the General human capital (Eric.etal, 1999).

The industry is, therefore; can be considered as a place for learning to improve professionalism and competencies. The workplace as the supreme learning environment must be coordinated properly to ensure that there is a close correlation between the types of training that the workforce is being prepared for vis-à-vis the work environment, tasks and work systems.

The objectives of institutions of higher learning in giving their education, must meet the expectations that industries regard in the context of finding the best in the pool to help them achieve industry goals. The goals need to be looked into in respect to institutional thrusts and objectives.

## 2.4. The Need for cooperation between HEI and Industry

There is a clear difference in the objectives and interests of higher education institutions and the industry. This discrepancy in their objectives calls for a need for creating a common platform where institutes and industry can meet face to face to share ideas and regularly interact for the reconciliation of their interests. The interaction can take place with the aim to commonly understand and jointly plan pre-employment and in-service training facilities.

According to Bryson, (2004) and Wheelen and Hunger, (2000) cited in Syed.etal, (2008) Partnership is an umbrella term used for linkage, interaction, collaboration, cooperation and alliance. It is a specific form of relationship between the sectors, higher education institutions and the industry; characterized by the creation of an organization with defined mission, strategy and policy for the harmonization of interests of each group. In the process of partnership the institutions are required to be responsive to a dynamic, ever changing environment having future orientation. Strategic partnership, therefore, underlines the importance of making decisions that

will ensure the organizations' ability to successfully respond to the changing circumstances in the long run.

Close interaction between the institute and the industry is seen as the platform for showcasing best practices, latest technological advancements and their implementation and impact on the Industry. The interaction between them is the basic means for improving the quality of technical and vocational education for adequately meeting the needs of the industry and economy. To have a closer interaction in place, industries are required to participate in the higher and technical and vocational education programs, with a goal to enhance the systems improvement. (Turganbayev, 2008)

The collaboration between University-Industry (UI) has an important significance for the promotion of educational institutions, growth of vibrant industries and development of national economies. For the last decades there was a grater and drastic technological and institutional changes. This made a dramatic intentions and activities for cooperation between educational institutions and the industry. The major stimulating factors for such dramatic shifting of approaches for cooperation and its growth are social, political, economic and technological forces. It was known that governments were the parties for supporting research and development but their assistance, for research related ventures, has declined whereas the pressures from global competitiveness and realization of the significance of science-based knowledge to the innovation process has forced to multiply the link manifold in different aspects (Feller, 1997, in Syed.etal, 2008)

For integrating industrial training programs and other industrial contributions to the enhancement of education and help for the improvement of the teaching-learning processes, university

industry interaction is a necessary condition. It helps to develop students' awareness on how they integrate their skills to job functions in the industry, attitudes to adapt to industrial environment, proper practical and relevant knowledge, skills and competencies in preparation to becoming self employed or work in the industry.

If industries and higher education institutions do collaboratively, they both can enjoy the outcome of their cooperation. Collaborative undertakings made by them will transform business firms into true learning organizations that understand and learn new ways of doing things, and this may ultimately alter the nature and direction of the entire business world through providing workers who are readily made for the purposes intended (Majudar, 2009).

Collaboration encourages a higher-level of learning, learning about leading edge technologies, learning about methods of creating future technologies and learning of the ways new technologies might affect the existing business. University-Industry linkage mechanism could help in identifying various individual scientists or research groups involved in research ventures pertinent to the Industry, facilitate their coordination, arrange their meetings, organize training workshop to design preliminary studies and to discuss problems faced by the companies in lunching their innovative products (Dodgson, 1993).

## 2.5. Opportunities for cooperation

Research outcomes in the recent past reflect on the potential of linkages between universities and industry for the survival of both parties in the competitive marketplace and as an engine for economic growth. Davis (1996) noted that 'university and industry now exist in a harsh and competitive economic climate. Their survival depends increasingly on their ability and willingness to adapt to an unprecedented pace of change.' There are various reasons for

university and industry to undertake collaborative research. The industry will be mainly benefited in terms of having ready access to professionals with the right knowledge, right skills and right attitude. On the other hand, the university graduates will have exposure and experience of the practical work life, which will act as a launching pad for their future professional career (Syed & Fatima, 2008).

UNESCO (1999) cited that partnership in the education of manpower may involve a wide range of actors including social partners, non-government institutions, community groups, or players in the private sector, apart from government and the institutions (Atchoarena, 1999).

The nature and strategies of partnerships and linkages in the education sector vary from country to country. The sources of the variation are cultural, economic and social factors prevailing in the countries. The industries are sectors to absorb the skilled manpower that are the fruits of the education sector. Government and the public sector as a major provider of education are perceived to have their own limitations in acting as a sole provider of higher education especially science, Technology and TVET.In some countries, provisions are made available having both quality and the adequacy of training that meet requirements by different segments of the population (Jhon, Terahynn and Margux,2012) .

In counties where trade and economic liberalization held and industrial policies are developed, markets that make them more vulnerable to competition via products and services are opening up. As a result internal factors such as democratic policies, contraction of the public sector, cuts in public funding, deregulation and privatization and the like all pointed out to the need to make partnerships work, the need to rely more on new players and actors. (Turkenbyev, 2008)

With collaboration Universities and industries can gain mutual benefits , institutions of advanced learning primarily obtain basic research funding, industrial expertise, exposure to practical real world problems, and employment opportunities for university graduates ( Ervin. et al, 2002).

According to Peters and Fusfeld (1982), cited by Woo et al.(2007), the driving forces that push university to collaborate with industry are (1) Industry provides a new source of financial support for university, (2) Industrial funds involve less bureaucratic formalities than the government financial support, (3) Industrially sponsored research provides student with exposure to real world research problems and (4) Industrially sponsored research provides university researchers a chance to work on intellectually challenging research projects.

The business concerns, that especially drive the industry for collaborating according to Woo et al. (2007) are to ensure: (1) access to human resource, including well-trained graduates and knowledgeable faculty, (2) access to basic and applied research results from which innovative products and processes will evolve, (3) access to professional expertise not usually found in an individual firm, (4) access to university facilities, not available in the company, (5) assistance in continuing education and training and (6) being good local citizens or fostering good community relations.

Early access to scientific or technological knowledge, risk reduction, access to unique research skills are taken as the main motivational factors from companies (Meyer-Krahmer and Schmoch, 1998). In addition collaboration is regarded as a means that might also reduce the recruiting and selection costs and increase efficiency of the business concerns in many ways.

According to Marcus. Etal, (2011) the following four factors are major reasons that call Industries to collaborate to Universities

- Industries seek to leverage their R&D funding
- Keen to access scientific knowledge
- Firms aim to improve their problem solving capability through University advice and assistance in ongoing R&D programs
- To get generic benefits including introduction to New techniques and technology and develop new technologies

Higher Education Institutions are centers for learning and research where the transfer and creation of knowledge is conducted whereas industries are places where manufacturing, trading and services are taken place. In the modern globalised economy the process of production distribution and trading held with industries is always facing different challenges as a result industries call for higher education institutions to come up with solutions and alternatives for encountering problems and new innovations begun to increase. Universities as centers for knowledge and innovations can also solve or propose solutions using their accumulated academic and research skills and inretutrn will get financial independence. These and other factors are creating opportunities that call them to work collaboratively.

## 2.6. Major Characteristics of Linkages, Benefits and Areas of partnership

Education, especially basic education is considered as a public good, governments are required for supplying and considered to provide its infrastructures as sole provider for the marginalized groups of a state.

The major characteristics of a Public and Private institutions and university collaboration emphasize its ability to transform the role of the government from being a sole provider of infrastructure to a supervisor of quality. Private sector takes the responsibility of building and

designing an asset, use academic and professional outcomes. Both the public and private sectors equally share in the responsibility of designing, building, financing and operating a project, which can increase efficiency of the educational process (Richard K, 2004).

At the soviet times (till the end of the 80-s) the system of interactions between industry and universities was controlled and regulated by the state. All the universities and enterprises belonged to the state that, could order both sides what to do to develop interactions between each other, to improve practical training of the students as the first aim. (Turganbayev, 2008) the Ethiopian education system also follows the same trend in the period (Mesfin, 2008).

The major areas of partnerships existed between the higher learning institutions and the industries according to Turganbayev, (2008) are:

- Teaching process:
  - − Participation of industrial partners in syllabi development;
  - − Participation of business representatives in education process; and
  - − Organization of all kinds of practice for students.
- Science process
  - − Conducting joint scientific projects with businesses;and
  - − Conducting joint scientific practical conferences.
- Certification process:
  - − Participation in the work of State Certification Committees;

- Assistance in determining subjects and supervising degree works of the students of the Universities;
- Reviewing degree works and projects by representatives of industrial companies; and
- Holding competitions of the degree works judged by IT companies.

- Mutual raising the level of the skills:
  - Getting extra higher education by workers of a partner-industry; and
  - Certification of the students and the teachers

- Organizational process:
  - Organizing the regional round of the International Programming Competition;and
  - Establishing the branches of the Sub-departments at the Companies

The above areas of partnerships were used by nations that created strong university industry linkages. Policy makers, governors and officials in higher education institutes shall have the understanding for getting the benefits of partnerships.

## 2.7. Better Coordination of Higher Education and Industry (Experiences)

For creating an effective partnership and linkage between the Institutions of Higher Learning and the industry partners need to have the realization of its significance and should have solid trust, firm commitment, effective communication and effective role of leadership as important elements for an effective UIP. Elmuti et al. (2005) regards Partner selection, senior management

commitment, clearly understood roles and communication between partners as ‘essential’ components of alliance success.

Management in University industry partnership programs by committing human and financial resources, time, and a great deal of attention to overcome the differences within the partnership, will balance their values in order to avoid conflicts and can maintain an effective partnership (Elmuti et al., 2005).

In order for developing a strong partnership a number of contributing factors were identified by scholars .Some of the contributing factors are support from top executives, perceived importance of the relationship, level and frequency of communication, well defined conflict resolution procedures, external competition as a motivator, portable technology, generalizable technology, and experience in working with other organizations. These relationships are largely influenced by the people involved in these relationships and by the organizational cultures of both partners (Plewa, and Quester, 2006).

The partnership of the University and industry shall be evaluated continuously so as to assess its effectiveness. Successful University industry partnership can be measured with its ability to produce and the number of new products, publications, patents, students trained, students hired and new enterprises started, as well as some intermediate out comes. Partners in the collaboration also weight the success of it based on the kind of benefits they generate from such partnerships. Without firm commitment, effective communication and effective role of leadership it will be difficult to find a ripe fruit from a partnership (Markus etal, 2011).

Hunt et al. (2002) regard trust, commitment and communication as success factors, for effective and successful alliances between university and industry. At the same time, the method and

mechanism of managing the linkage will also affect performance. In conformity with this view, one industrial observer estimates that only four percent of university-based centers actually exceeded corporate expectations (Markus etal, 2011).

Countries took follow approaches that are tailored to make the link created to work effectively.In India an innovative program of so-called 'practice schools' (PS) was established. The schools were established in a number of enterprises which agree to collaborate with BITS (Birla Institute of Technology and Sciences) staff on a regular basis. Within this school, students are supervised jointly by BITS teaching staff posted at the enterprise and the staff of the enterprise. In Thailand a co-operative education scheme practiced at Suranaree University of Technology (SUT). The program is considered to be an integral part of Suranaree University of Technology's undergraduate curricula students' works as a full-time employee at the work site. More importantly, the university's curriculum can be adapted to society in this age of increasing academic realization. Feedback on the quality and relevance of academic programs and course content as well as information on current research and development is exchanged. (Martin, 2000)

Industrial Professional development trainings are also provided by institutions. In Turkey, four different kinds of activities fall under continuous professional development carried out by Bogaziçi University: MESSE seminars (one to three-day seminars on popular subjects); BU Foundation certificate programs (6- to 60-day events); BU Certificate programs (6- to 30-day events) and; Courses and seminars on a specific topic (one-time events on a specific topic, lasting usually one to two days.

Some of the seminar titles have been finance, strategic management, environmental management, human resource management, economic and political developments in Turkey (Martin, 2000).

In Israel joint R&D programs were undertaken by the Hebrew University of Jerusalem and

commercial firms. The major agreement between the university and the industry is 'Research and licensing agreements' where research results (whether patented or not) are licensed to interested parties in industry. In return, the industry finances continuing research in this field at the university, commits itself to develop products that will be the outcome of the project. In this case, the industry purchases some research services, mainly analysis, testing, etc and receives the results for its use.

In Egypt R&D projects still very much depend on the personal contacts of researchers with local industry. The Egyptian companies do not generally have their own R&D centers. However, projects based on individual contacts often lead to long-lasting collaboration. The universities and their related research centers do have research facilities that can be used to develop solutions to meet industry's needs (Martin, 2000).

In Singapore the Council for Professional and Technical Education was established in 1979 to provide better coordination among the various government agencies. Its main objective is to ensure that an adequate supply of trained professional, technical and skilled manpower is available for Singapore's continued economic development and restructuring

Considering that people and institutions are not always interested in getting involved, partnerships through industry-institute interaction can only is achieved by finding out strategies to draw relevant stakeholders into systematic and reciprocal interaction to address such work place trends and technology emancipation (Cheung, 1994).

A study on Institutional Capacities and Gaps conducted for the identification of ways for strengthening university-industry linkages in Africa states that linking HEI with the productive sector in Africa is constrained but not deterred by, inter alia: low numbers of qualified faculty,

including doctorate degree holders; brain drain, ageing faculty, and other issues associated with staff retention; low enrolment in mathematics, engineering, and other science-related disciplines against large enrolments in social sciences and humanities; inadequate research infrastructure at many universities and lack of access to up-to-date publications; funding constraints; and teaching rather than research-focused mandates (Jhon,etal,2012) .

The study found out the interest of regional universities intention to partner with other universities in Africa to support peer learning and exchange of good practices and lessons learned regarding university-industry relations. It also stressed on the contexualities of linking attempts; Simple imitation without reflection on the specific economic realities and contexts in which African HEIs operate may simply lead to the development of vacuous policies and strategies which would create a hollow platform for moving forward (Jhon, Terahynn and Margux,2012).

Universities, therefore, need to tailor their own goals and activities in a pragmatic way according to a realistic appraisal of the current and future research capacity of their institutions in order to effectively respond to the needs of the African productive sector. Universities in the sub Saharan Africa need to work on lower-tech solutions, to adapt existing technologies, and to upgrade processes to appropriately respond to local problems which do not necessarily demand the most complex technological solution that developed universities found in industrial nations are interested (Jhonson,2008).

As noted in the findings of John, et al. (2012), universities lack networks with the productive sector and recommended for creating opportunities to bring together university and private sector representatives to the same table. The platform could help foster and forge stronger linkages,

promote clearer understanding of mutual needs and constraints in meeting those needs, and stimulate greater demand on the part of industry. The private sector must also reach out. A strong productive sector requires robust input from universities and other higher education institutions for knowledge generation and skills development of the workforce.

The study stressfully concluded about the Government's role in creating a conducive, incentivized environment for strengthening such linkages by putting in place policy frameworks for Science &Technology strategies, appropriate legislation for the protection of intellectual property rights, and funding R&D, among others.

## 2.8. The Ethiopian Higher Education

The Ethiopian higher education system has shown a remarkable expansion in the recent years. The higher education sector in Ethiopia consists of colleges (teacher education) and universities, whereby universities are responsible for degree programs, both at the undergraduate (Bachelor) and graduate (Master and PhD) level. Recently 30 public universities and private higher institutions are educating students.

Enrollment in the higher education in Ethiopia is showing a substantial growth for the last six years starting from 2005/06 .An average growth of 22% in undergraduate programs both at the public and private universities and 30 % in postgraduate programs registration (MOE, 2008).The gross higher enrollment rate is, however; low compared to sub-Saharan African countries (Mulu,2011).

The current enrollment in the post-graduate programs is not in a position to support the expansion process specifically in the science and technology sector, where the largest expansion is planned. This problem lead to deteriorated working conditions through crating teaching loads

with the existing staffs and is a serious threat for quality education (Mulu, 2011). In order to avoid the problem assistant lecturers are recruited from the fresh bachelor graduates. Staff turnover is high due to a number of reasons.

University education in Ethiopia has of about sixty years, and it as growing at a lower phase .It as not in a position to support the development process through the supply of skilled manpower which is a comprehensive agenda of developing countries like Ethiopia. A policy intending to expand research activities in universities of Ethiopia that emanates from the contextual conditions of the country will contribute to significantly alleviating problems of suffering from relatively slow social and political progress, and becoming increasingly marginalized in the world economy. It will put the country in a sustainable path to development and improvement of the livelihood of the population (Teshome, 2004).

Gelawedewos in 2003 states that, though there are few institutions involved in relevant research; many of the higher education institutions in Ethiopia are not actively engaged in research activities. Even the few research undertakings have critical problems of transparency and their findings have limited disseminations to the relevant community. The objectives of the research circulates around academic areas, catering for individual and donor interests and lack the required capacity in solving institutional and national or societal problems. Many are also characterized by lack of transparency with respect to the selection of researchable topics, participating researchers, fund utilization and modes of accountability. Results are not, for instance, feeding back to the teaching and learning system, improving the curricula and are not disseminated to relevant stakeholders who might have direct or indirect relevance and be influenced by the results.

The goal of higher education is clearly stated in the Higher Education Proclamation (2009).That is to educate graduates Knowledgeable, skilled and mentally and academically ready for working in the labor market. This indirectly means that the graduates are required to fit for industry purposes (Mulu, 2011).

The problem with Ethiopian graduates of higher education is lack of employment opportunities in the labor market. A World Bank 2003 report about the Ethiopian labor market in support to the above idea is stating labor market for higher education graduates remains limited in an economy where 80% of the labor force is engaged in agriculture and the civil service appears amply staffed. Only rapid economic growth will provide both the financing required to expand the system and an increase of gainful employment opportunities necessary to employ the rising numbers (Saint, 2004).

Besides to their education roles Higher education institutions are required to support students' educational choices and students' job finding after graduation. Hence educational processes are critical elements in improving the labor market relevance of education. How does this work? Through the inclusion of the required competences and skills in the curriculum, employers and educators are therefore should cooperate in defining the curriculum. And in the learning process of the students, employers and educational providers should work together. This can be done either by 'bringing the classroom to the workplace' via internships or by 'bringing the workplace to the classroom' by means of e.g. simulations or serious games (McKinsey, 2012).

The 2009 higher education proclamation also delegates that universities should have socio economic contribution to enhance the economic progress of the country. In order to fulfill the

above requirement the Ethiopian Universities need to work jointly with other universities world wide and to industries in the country.

For upgrading their instructional and research undertaking qualities Universities can create linkages with universities found in the nation or oversees.Linkags will help them to share new academic and technological outcomes and adopt improved work skills and tecniqs.This can be done by undergoing joint researches and using Diaspora educators found in the universities outside of the country. In this regard Ethiopian universities are not open (close) to collaborate with either within the national universities in the country or to universities found out of Ethiopia ( Sisay,2009) .Mulu 2009 supports this idea as in Ethiopia, University industry partnership in terms of academic research is almost nonexistent. Policies and frameworks to help this link creation s not well developed and institutional frameworks are almost nonexistent. The causes of such problems according to Mulu are lacks of Leadership, Policy framework, funds, institutional commitment and support and roles of government and private sectors (Mulu, 2009).

In sum, the literatures works revised above assert that even though HEI and the industry have separate roles of establishments, they need to work in collaboration so as to enhance national development and to survive in the highly changing globalized world. Etzkowitz and Leydesdorff in their writing in 2000 raised the need for an interface between the three actors in education and development, calling it the triple Helix. The common objective is to realize an innovative environment consisting of university spin-off firms, tri-lateral initiatives for knowledge based economic development, and strategic alliances among firms, government, and academic research groups. These arrangements are often encouraged, but not controlled, by government. Leydesdorff in 2012, pose other dimension local-global actors as a fourth contributors and university as a leading institution in the global transaction process.

Whatever is raised in related to partnership it is stressing the need of collaborating the institutional and economic actors and HI as a leader in the future endover. But in order to create the partnership the mentioned actors should come into the same platform and formulate a common framework that came to satisfy their collaborative interests.

Policy framework, leadership from top to bottom management, trust, commitment , communication experience in working with other organizations and fund (committing financial resources) are raised as success factors for formulating effective U-I linkage.Therfore for building a strong and working partnership the platform should find out such skills and resources from partnering actors.

The purpose of this paper is therefore; to examine the level of linkage existing between AAiT and industries found in the city of Addis Ababa and to see how such linkage can create opportunities to support the new higher education expansion program.

# Chapter Three

# Research Methodology and Techniques for Data Collection

## 3.1. Research Methodology

In this study, a mixed approach of research was conducted to analyze the link between the university and industry.Descritive research method or descriptive approach that uses survey and interview were designed for the study. The method is required for the reason that descriptive method of research is applied to gather information about the present existing condition. The purpose of employing this method is to describe the nature of a situation, as it exists at the time of the study and to explore the cause/s of particular phenomena. It is opted to use this method to obtain first hand data from the respondents so as to formulate rational and sound conclusions and recommendations for the study.

The research use quantitative data collected by using questionnaire and summarized from the 2011manufacturing industries survey report conducted by the Central Statistical Agency (CSA). Qualitative data including attitudes, opinions, and beliefs of research participants was also used.

## 3.2. Conceptual framework

AAiT is an institution of higher learning having its own form of governance and administration and staffs conducting the teaching learning activity obeying the rules and regulations. Industries are also establishment having their on roles to accomplish and have their workers for conducting their activities. These two independent institution when came to work in collaboration they need

to appear in a platform that enabled them to meet. In such a platform the actors will exhibit different characters that have a background with their organizational systems. Therefore this analysis takes the systems theory form framing its conceptual flow.

systems theory is a method of inquiry aimed toward general theory development, testing, and validation the systematic inquiry method. According to Alexander and Stanley (1998) systems theory is a rather field inquiry concerned with the holistic and integrative exploration of phenomena and events, systems theory pertains to both epistemological and ontological situations.

In the systems approach ontological and epistemological aspects and aspects that are at once both and should not be circumscribed to either can also be addressed.

As a methodology, it sets apart a theoretical system from an empirical system. The theoretical system is a complex of concepts, suppositions, and propositions having both logical Integration and empirical reference, while the later is a set of phenomena in the observable world that is amenable to description and analysis by means of a theoretical system (Ibid).

Ackoff's definition as explained in Laszlo and Krippner, 1998 a system is a set of two or more interrelated components with the following properties:

*1. Each component has an effect on the functioning of the whole.*

*2. Each component is affected by at least one other element in the system.*

*3. All possible subgroups of components also have the first two properties.*

*(Ackoff, 1981, pp. 15-16.)*

Therefore, the outcome of the relationship is defined as resulting from a comparison between the expected performance and the actual performance in terms of knowledge generation, transmission and propagation. Relation-ships may result in new kind of goals that will also allow

for an independent effect on relationship outcome, which are offered for further theoretical debate and for future empirical investigation in the field.

Adopting systems theory principles is assumed to fit for the analysis of the HEI Industry linkages since systems theory helps to compare with the reality of the *'theory-in-use'* (Argyrols and Scion 1996). Theory-inuse reflects what happens on the ground in terms of organizational structures and culture, ongoing decision making, resource allocation *etc*.

The main data sources used in the study are individual who part of the organizations, documents and interviews are. The analysis used primary data acquired from questionnaires and interviews. The secondary data are acquired from published articles, strategic and other documents.

Selected industries are taken as subjects for collecting data in order to identify what kind of linkages and collaboration they need from the university and from the university-industry interaction.

## 3.3. Research setting

The data for this study, industry university linkage the case of AAiT; were collected from two groups, the instructors of Addis Ababa Institute of Technology and industries found in Addis Ababa and Industries who are engaged in different activities and employing engineering graduates.

### 3.3.1. Addis Ababa University Institute of Technology (AAiT)

The data used for this research is collected from instructors of Addis Ababa Institute of Technology from Chemical, Electrical Mechanical and Civil Engineering departments. According to the personnel office of the institute there were 333 academic staffs who are

engaged in the provision of education in November 2012. The academic staff of the institutive is comprised of

1. School of Chemical and Bio Engineering 68 staffs
2. School of Civil and Environmental Engineering 120 staffs
3. School of Electricasl and Computer 71 staffs and

Each school is headed by a school head and there were 20 chairs of departments.

The institute of Technology as presented in its website has 4 schools that gave 4 undergraduate programs, Electrical and computer engineering, Mechanical engineering, Chemical engineering and civil engineering programs and having 10 areas of specialization. In the institute, there are three centers energy technology, Biomedical engineering and Rail way engineering and three centers of excellence related to water, energy and logistics. Since 2010 the institute is providing postgraduate studies in 33programs (www.aait.edu.et.).

In the Institute, according to the profile of AAiT there are university industry linkage and Technology Transfer (TT) Business unit offices designed to facilitate the partnership between the institute and the industry. The offices are designed to create links from the industry in order to support sustainable technology transfer system and for the implementation of quality internship programs and career development.

## Industry

According to the sector profile cited by the Ministry of Industry, the industry sector of Ethiopia, though it has shown some growth and diversification in recent years; contributes to about 4 percent of the overall economy. Much of this sector is concentrated in Addis Ababa. Food and

beverages constitute some 40 percent of the sector though textiles and leather are also important segments with a special emphasis of the leather industry for the export market. Privatization of state-owned enterprises is still underway since the late 1990s.

As presented in the National industrial science and technology policy report prepared by the Ethiopian science & technology commission, at present the industrial sector of Ethiopia like other economic and service sectors in the country is encountered with major scientific and technological problems. The sector apart from importing technologies for production and services is not striving to trouble shoot technical activities, generation and utilization of suitable technologies.

The manufacturing industry of Ethiopia characterized as a highly engaged sector in the production of consumer goods, its linkage with other sectors is loose; consumption of local inputs is low and its contribution in producing machinery necessary for various economic sectors including the sector is limited. In addition, efforts made to improve and utilize production techniques and inputs to enhance the development of handicrafts are at low level (Science and Technology commission report).

The sector is characterized with small firms much of them are operated with families and much of them has none at all or low R&D activities and investment for the purpose of Research and Development.

The industry taken for this purpose were comprised of private and state owned firms engaged in the production of goods and services and serve as regulatory institutes for production companies and individual properties.

Industrial organizations are not only companies but also employers of both skilled and unskilled labor. According to a survey report made by Central Statistical Agency 2011 in Ethiopia, there

are about 2,949 establishments engaged in the manufacturing of 15 kinds of products ranging from a medium level manufacturing activity, Agro processing and food preparations to large scale production of industrial inputs and finished goods. These establishments created employment opportunities for a total of 15,619 people, 157,575 (73 %) permanent and 57,935 (27 %) contract workers. Manufacturing firms excluding nonmetallic industries i.e., textile and food products manufacturing firms; employ 20 % of the total workforce. In the country the manufacturing sector creates an average of 56 permanent employments per establishment, irrespective of their scales of production. Note that the institutions included in this survey are enterprises having 10 or more employees. Sector wise, the textile industry is the major employer an average 634 employees per establishment, Manufacture of Motor vehicles, trailers and semi trailers is the second to create an average 231 employees per establishments. Beverage industries are the third in creating employment created an average 200 employment per establishments and apparel industry is the next with 151 per establishment. From the total 2949 institutions those created larger employment opportunities are no more than 300 firms much of them operate with unskilled labor. (CSA, 2011).

## 3.4. Sampling and sample size:

To determine the total number of sample subjects from AAiT the researcher made consults with the University industry linkage officer of the university and an agreement was made to distribute 20 questionnaires assuming 5 to each department via the UI link office. But there was no questionnaire filled and returned to the office except for the offices response and therefore another 20 questionnaires were distributed randomly to instructors by the researcher.

Of the 20 questionnaires distributed to the instructors 12 questionnaires were filled and returned, since all of the returned questionnaire are completely filled all of them were used for the analysis.

Out of the industries found in the survey made by CSA many of the industries employed unskilled labor. The researcher is therefore designed to collect data from purposefully selected industries found in Addis Ababa who required skilled personnel specifically engineers and technicians. Industries selected for the purpose include manufacturing industries with a high turnover, EEPCO (for its sole production of Electric Power and scale), ETC (for a sole provider of Telecom communication service and its scale), Regulatory institutions at various levels of management (viz., top, middle and junior) construction and Business firms. Those commercial establishments who employ less than 10 persons are not included in the research population.

Research population as described above is estimated to be 333 for higher institutions and around 300 for industries. Random sampling is adopted for the Instructors in the University and Purposeful sampling method was applied for collecting data from the industry, considering no of employment and skills requirement.

The data collected for this study is a primary data collected mainly through a survey questionnaire. A short questionnaire was developed for this purpose, which consisted of three parts for the institution and four parts for the industry. The first part for institutions is Designed to study the profile of the respondents, second perceptions of the respondents about the industry-institute interface, third the existence of industry-institute interface and identify respondents knowledge and opinions about the perception of the instructors for the Ethiopian technology graduates labour market and the 70 :30 HEI placement. The industry part comprises of four parts the first part is designed to study the profile of the respondents, second perceptions of the respondents about the industry-institute interface, the third part is Benefits and Opportunities of the industry –Institute partnership and the fourth enumerating the challenges involved and measures to overcome those challenges. An interview with the Industry university link officer in Addis Ababa institute of technology was also made for enumerating the challenges involved and measures to overcome those challenges.

## 3.5. Instruments of Data collection

The instruments employed for the collection of data were

- Questionnaires separately designed for the two kinds of respondents
- Interview Guidelines
- Documentary data

The questionnaires prepared for the collection of data were tested for their validity using expert opinions from both entities, it was distributed to instructors at AAiT and Industry workers for including their opinions and corrections and accordingly it was designed and distributed for a further data collection. T the he documentary data was from printed materials included in reference list.

The tools used for data collection are found in the annex.

**Data Analysis Methods:**

40 questionnaires were distributed; 20 to each entity involved. Out of these, 12 questionnaires from higher institutions, and 11 questionnaires from industry were returned within the time limit set for data collection.

# Chapter Four

## Data Analysis and Interpretations

In order to analyze the existing University industry link between Addis Ababa Institute of Technology and Industries engaged in business activities having large number of employment and high turnover was taken as samples. A questionnaire having three parts for higher institute and four parts for the industry was prepared for the purpose. Part-I identified the profile of the participants in the survey; part-II focused on Industry-Institute Interface; part-III tried to identify the benefits and opportunities of Industry-Institute Interactions; and part-IV aimed at identifying the major challenges and possible measures to address them(for the industry only). The questions were mostly close ended, but contained a few open questions in part III and IV, to enable the participants to give opinions. All 23 responses from participants took part in the survey found to be in order. The following paragraphs present the summary of the data obtained in a brief manner.

The analysis is, therefore; organized in a similar pattern with the questionnaire. In Part I. back ground of the Participants is presented. Part II is about Industry-Institute Interface, Part III Benefits and Opportunities of the partnership and opinions of Instructors in AAIT about the existing professional labor market and the new higher institution placement policy. Part IV of the analysis is focusing on Challenges and possible Solutions raised by subjects.

### 4.1. Background of the Participants:

Out of 20 questionnaires distributed to a cross section of teaching staff of AAIT, 12 were returned and since all were properly responded used for the analysis. Out of 20 questionnaires distributed to employees of industries involving top, middle and junior management levels, 11 were returned by the time the data were compiled and used for analysis. The profile of the respondents is summarized in the tables following:

It is known that universities are higher level of academic institutions and their objective of establishment is known; knowledge and technology creation and transfer.Therfore, the major activity of Addis Ababa institute of Technology, a government establishment for transfer of knowledge and technology to its students.

Whereas the industrial organizations have their own specific objectives whoever established them have its own objective to attain with. Out of the 11 respondents 6 are working in Government enterprises and the remaining 5 are from Private companies and from organizations jointly owned with Government and Private (Share companies).Hence the composition of the participants is with the proportion of 54.5 % Government enterprises and 45.5 % share companies.

Table 1.2 Profile of the participant respondents: Major Activity

| PARTICIPANTS | | INDUSTRY | |
|---|---|---|---|
| **Major Activity** | | Number | Per Cent |
| 1 | Manufacturing | 3 | 27% |
| 2 | Service | 4 | 36% |
| 3 | Power Supply | 2 | 18% |
| 6 | Others/Business | 2 | 18% |
| | TOTAL | 11 | 100% |

From the industry participants, 36 % of the organizations are service providers, 27% engaged in manufacturing activities of them 2 are private companies and 1 a share company owned jointly with the state and a foreign company, of the two companies 1 have a wide range of manufacturing activities.18% from a power supply corporation with a head office and Project respondents and the rest are Business firms engaged in consultancy and merchandising technical equipments.

Table 1.3.1 Profile of the participant respondents: Position Held

| PARTICIPANTS | | INDUSTRY |
|---|---|---|
| **Position Held** | | Number |
| 1 | Top Management | 4 |
| 2 | Middle Management | 3 |
| 3 | Junior Management | 4 |
| | TOTAL | 11 |

Table 1.3.2 Profile of the participant respondents: Position Held

| PARTICIPANTS | | University |
|---|---|---|
| **Position Held** | | Number |
| 1 | Instructor | 8 |
| 2 | Head of Department | 3 |
| 3 | U-I linkage officer | 1 |
| | TOTAL | 12 |

Among the 12 participants of AAiT 3responses belonged to Heads of Departments, 8 were Instructors from whom 2 assistant lecturers and were 6 lecturers. From the 11 industry participants 4 belonged to top management, 3 are from the middle management and the remaining 4 were junior managers.

Table 1.4 Profiles of the Participant respondents: Age

| PARTICIPANTS | | AAiT | INDUSTRY |
|---|---|---|---|
| **Age of the Respondent** | | Number | Number |
| 1 | Below 25 years | 2 | 0 |
| 2 | 25 to 35years | 6 | 7 |
| 3 | 35 to 55 years | 4 | 4 |
| 4 | Above 55 years | 0 | 0 |
| | TOTAL | 12 | 11 |

In both cases majority of participating respondents belonged to the age group 25 to 35 years 60 % in the institution and 64 % in the industry, and the rest belonged to the next age group, i.e. 35 to 55 years. Only two respondents of the university are in the age range Below 25 years while there is no industry respondent that fall in this group.

Table 1.5 Profile of the participant respondents: Period of Service

| PARTICIPANTS | | AAiT | INDUSTRY |
|---|---|---|---|
| **Service with present employer** | | Number | Number |
| 1 | Less than 1 year | 2 | 1 |
| 2 | More than 1 but less than 5 yrs | 5 | 4 |
| 3 | More than 5 years | 5 | 6 |
| | TOTAL | 12 | 11 |

The service profile of Participants from AAiT shows that 5 of the respondents serve in the university for more than 1 but less than 5 years and the other 5 respondents give the service for more than 5 years, only 2 respondents were with service less than a year. While the service profile of industry respondents shows that the majority of them were serving in the industry for more than 5 years, 4 serve in the industry for more than 1year but less than 5 years and there was only one respondent who serves in the industry for less than1 year.

Table 1.6 Profile of the participant respondents: Gender

| PARTICIPANTS | | AAiT | | INDUSTRY | |
|---|---|---|---|---|---|
| **Gender** | | Number | %from respondents | Number | %from respondents |
| 1 | Male | 11 | 92% | 11 | 100% |
| 2 | Female | 1 | 8% | 0 | 0% |
| | TOTAL | 12 | 100% | 11 | 100% |

Majority of the higher education respondents were male, only 1 (8%) of them was a female. While in industry all of them are males.

Table 1.7 Profile of the participant respondents: Education Level

| PARTICIPANTS | | AAiT | | INDUSTRY | |
|---|---|---|---|---|---|
| **Educational Level** | | Number | % of respondents | Number | % of respondent |
| 1 | Diploma Level | 0 | 0% | 0 | 0% |
| 2 | First Degree Level | 3 | 25% | 8 | 73% |
| 3 | Second Degree Level | 6 | 50% | 3 | 27% |
| 4 | Doctorate and above | 3 | 25% | 0 | 0% |
| | TOTAL | 12 | 100% | 11 | 100% |

All of the respondents who were working in the Addis Ababa institute of Technology and the industry have a university background, at least bachelor degrees. When one sees the academic status of higher education respondents 75 % ( 9 out of 12) were graduates and above. While 73 % (8 out of 11) of industry respondents were Bachelor Degree holders and the remaining 3 of them (27 %) were with their second degree.

Generally, the profile of the respondents shows that the respondents were graduates, experienced and capable of knowing what they are responding (explain, understand abut of U-I link).

## 4.2. Industry-Institute Interface

The purpose of this part is to examine the perceptions of instructors in the University and officers in the industry about university –Industry partnership. The first part of the analysis is a presentation of instructor's perceptions about and towards creating a link between the university and industry and tried to identify the nature and the level of linkages that exist between higher education and industry.

All of the respondents from the university believe in the need to create a link with the industry, for the dichotomous variables question asking about the importance of linking higher education with the industry all of the respondents answered yes.. Even though all of them agreed with the need to create linkages with the Industry only 8 of them gave their responses for the question that asks them to identify the kind of benefits acquired from such a link. Of the respondents 88% gave higher rank for experience sharing as the major kind of benefit but 11 out of 12 (92%) respondents prioritize academic and research support, which include Apprenticeship and on the job trainings is the most important benefit in their response to the next question, as the most important benefit. Only one respondent out of eight instructors gave mutual economic benefit as a benefit while 7 out of 12 respondents, who were 58% of the respondents; gave it the second priority in its importance and a similar fashion is seen to financial support also.

Table 2.1 Kinds of benefits from Linkages between AAiT and Industries

| **Participants** | | **AAiT** |
|---|---|---|
| No | Kinds of Benefits | No of responses |
| 1 | Experience sharing/Learning each other | 7 |
| 2 | Research support | 3 |
| 3 | Financial support | 1 |
| 4 | Mutual Economic Support | 1 |
| 5 | Problem solving skills | 1 |
| Total No of respondents | | 12 |

Questions focused for the existing linkage between the University and Industry was included in this part of the questionnaire and the first question of this part is prepared for knowing the knowledge of the respondents about an existing link.

Table 2.2 Rank of importance of link benefits

| No | The most Important Benefits | No of responses |
|---|---|---|
| 1 | Academic and Research support | 11 |
| 2 | Financial spounsership | 6 |
| 3 | Mutual Economic benefits/Business | 7 |
| 4 | Management and Administration | 1 |
| | Total no of respondents | 12 |

The questions prepared for the instructors in Addis Ababa Institute of Technology constitutes a yes or no type of responses and the one for industry respondents was a five point scale – whether for a long time, recently, very recently, rarely, or very rarely ,to have the linkage. The responses were summarized in the tables below:

Table 2.3 Existing linkage between AAiT and Industry, AAiT respondents

| Question | No of responses | | |
|---|---|---|---|
| | Yes | No | I don't know |

| | | | |
|---|---|---|---|
| Is there any existing linkage between AAiT and Industry | 11 | 0 | 1 |

Eleven of the respondents from the Addis Ababa Institute of Technology have the knowledge of an existing linkage between Addis Ababa institute of Technology and the Industry whereas, one respondent with a PHD responded of having no knowledge about any existing linkage. Regarding the establishment of personal links 10 of the instructors respondents have personal links with industries, one of them was a worker in the industry before he became the university staff, 2 of the respondent instructors gave their responses as they do not have any link with the industry.

Out of the ten respondents having personal linkages four (40%) were providing trainings to industries and 7 (70%) are working with the industries by giving consultancy services. Regarding institutional linkages out of the eleven respondents who have known about an existing institutional link between the AAIT and Industries 3 of them (27%) felt the linkage as poor,6 (50%) fair and the remaining good. Almost all 90%, including the one who said there is no link of the respondents perceived there is lower link between AAIT and industry.

Instructors were asked about how they use their industry relations/experiences to supplement their lectures and classroom presentations. A total of 4 respondents 40% of those having personal linkages with the industry answered they used their expertise for providing examples (Academic purposes),40% arrange field visits for their students and only one respondent did not use it to supplement because of his lack of experience.

Table 2.3 Existence of Linkages between Higher Education and Industry/Industry

| PARTICIPANTS | | INDUSTRY | |
|---|---|---|---|
| **Existence of Linkage** | | Number | % of respondents |
| 1 | For a long time | 3 | 27% |

| | | | |
|---|---|---|---|
| 2 | Recently | 3 | 27% |
| 3 | Very Recently | 0 | 0% |
| 4 | Rarely | 4 | 36% |
| 5 | Very Rarely | 1 | 9% |
| | TOTAL | 11 | 100% |

All of the respondents from industry participants gave positive responses about existence of linkages and 3 out of them(27%) knows links for longer times even during the previous government, an equivalent number of respondents have the knowledge of a recently established links and 4 (36 %) felt about the presence of rare linkage.

The following table (table 2.4) shows that a total of 23 respondents from both the university and industry categorize the types of links existed. Academic and research partnership, which is mainly Apprenticeship as per the statements of industrialists and two instructors was; categorized as the first kind, 91 % of the Higher education respondents and 72% of the respondents from the industry side ranked it first.Sponsourship is also taken as the most important kind of existing link having an equivalent share with the academic and research link form the industry side and it has an 18% value from the university side. Business relationship including using university testing and calibration services got an equal weight from both sides, 36 %.

Table 2.4 Category of Linkages between Higher Education and Industry

| | PARTICIPANTS | AAiT | | INDUSTRY | | TOTAL | |
|---|---|---|---|---|---|---|---|
| No | **Category of Linkages** | Number | % of respondents | Number | % of respondents | Number | % of respondents |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | Academic & Research | 10 | 91% | 8 | 72% | 18 | 82% |
| 2 | Employer | 0 | 0% | 6 | 54% | 6 | 27% |
| 3 | Sponsor | 2 | 18% | 6 | 72% | 8 | 36% |
| 4 | Business Relationship | 4 | 36% | 4 | 36% | 8 | 36% |
| 5 | Training | 3 | 27% | 0 | 0% | 3 | 14% |
| | Total no of respondents | 12 | | 11 | | 23 | |

University respondents give no consideration for "employment support" they consider it as the none existent one with no respondent, while 54 % of industry respondent consider it as the third point of collaboration. From respondents of AAiT 27 percent hailed training as a third kind of linkage while it is not considered as an exiting link form the industry side with a respondent. From the above table,it can easily be concluded that academic and research and sponsorship are the major links which is considered as existing from both sides while based on the responses made from industry respondents it can be said the institute of HE;AAiT did not need or use training facilities provided with industries, apart from internship programs .

A respondent in an industry stressed that he had observed a strong partnership between the industry and the institute prior to 1991.According to him the command system enforces both parties to communicate each other and industries came to the institutes seeking employees before they get graduated. According to him there were no lecturers who came to his industry for supervising students. A similar response was acquired from an instructor from the institute; who told to have an experience in the industry before joining the university.

## 4.3. Benefits and Opportunities

This part is intended to analyze and rank the most benevolent part from a partnership established between University and Industry and to find out existing opportunities for collaborations. All of the respondents from the university and the industry agreed that partnership between the two is beneficial.

Table 3.1 Greater Beneficiary from the linkages between Higher Education and Industry

| GREATER BENEFICIARY FROM THE LINKAGES | | HIGHER EDUCATION | | INDUSTRY | | TOTAL | |
|---|---|---|---|---|---|---|---|
| | | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| 1 | Higher Education | 3 | 25 | 2 | 18 | 5 | 21 |
| 2 | Industry | 3 | 25 | 3 | 27 | 6 | 26 |
| 3 | Both | 6 | 50 | 6 | 55 | 12 | 52 |
| | TOTAL | 12 | 100% | 11 | 100% | 23 | 100% |

As presented in the table, a total 52% of the respondents from both entities (6 from each) argued that both parties can benefit from the partnership. An equal number of respondents believed industry as a greater

Beneficiary from the partnership and only 2 respondents from 11 respondents from the Industry believed university as a grater beneficiary.

An interview was conducted to investigate about existing opportunities and challenges for enhancing collaboration between the industry and universities .Majority of the respondents from both entities felt that opportunities for better cooperation existed. Some of the opportunities for enhancing the partnership the respondents presented are the following:

- During internships trainees contribute values for the industries
- Trainees will also acquire skills to supplement their knowledge and that will enable them better employees
- Practical knowledge acquired in the industry but not supported with scientific explanations will help universities for further exploration
- Access to Advanced technological outcomes and potential for vast technical and technological innovations;
- Industries are hiring skilled professionals from overseas but partnerships will create opportunities for students via providing practical skills and in return the industries will get skilled manpower.
- Industries will get quality and trained personnel at lesser recruitment costs; and
- Enabling professional way of managing business and technical operations.

## 4.4. Challenges and Solutions

Almost all the respondents felt the existence of challenges in creating alliances between the two. Respondents from the industry perceived that they don't have an information about an office in the university establish for linking it to the industry, some said that the institutes came to them for looking an apprenticeship to their students. Some respondents in the Institute stated the industry as non cooperative for creating partnerships.

Some of the major challenges raised as factors affecting the partnership by the respondents are the following:

- No force ensuring the linkages
- Existence of a gap between the two
- Slow growth of industrial sector in Ethiopia
- Inability to orient students about the industry and work ethics
- Scarcity of resources
- Lack of interest in employees from both sides

For overcoming the challenges the key players in forging alliances majority of the respondents felt a collective responsibility between management and employees is needed. , a sizeable number of respondents felt it as the task for the management. For the open ended items that askes to provide solutions for overcoming the problem the following are suggested

- conducting periodical studies on various industries and evaluating the dynamics;
- developing and implementing capacity building training to industrial managers;
- creating national understanding and awareness campaigns to make know the benefits and opportunities of alliances between the two entities;

## 4.5. Interviews with a cross-section of respondents:

In order to identify the expectations of higher institutions and industries from the other, interviews were conducted with a cross section of respondents. The views of the interviewees were thus summarized:

Industry expectations from higher institutions:

- sharing of latest knowledge and development in various fields of study;
- educating and training the industrial employees as to safety, hygiene, productivity and best practices;
- following the status of trainees in the industry

- need for orientation about the industry environments (about chemicals handing,safty and work ethics)

Higher institutions expectations from industries:

- willingness to accommodate university/college students as ‘interns’ and ‘apprentices’;
- cooperation in providing information and data for research purposes
- Sponsorship of various events and activities of higher institutions;

## 4.6. Labor market and the new placement policy

As discussed in the above parts of the paper all of the respondents agreed with the need to create platform for linking the institute to the industry. The industry believed that the university is not producing labor that fits to the labor market.Therfore this part of the paper tried to evaluate the perception of instructors of the Higher Education Institute about the existing engineering graduates labor market and the 70/30 placement decisions of the government.

The first question for this part is a question about their knowledge of the labor market. Out of the 12 respondents 11 gave their responses for the question and 3 of them (27%) have sufficient information, 5 (45%) said they have enough information, 2 said of having little information and one don’t have the information.

All of them have the knowledge about the current placement and 8 (66.7%) of them think the current placement decision is appropriate, 3 (25%) thought it is not and one respondent is not sure about the fitness of the placement decision.

From the eight respondents who are positive about the shifting of higher education placement to science and engineering four (50%) believed that industrialization is in process in the country and labor should proportionality supplied to the market. 25 % or 2 of them mentioned that the activity shows governments

attention for developing the industry , 2 respondents raised the issue of globalization as a driving force and other 2 agreed with the policy but the think it needs a further revision.

Whereas those said the policy is not timely raise two reasons for their argument. The first reason is the industrialization in the country is too slow to absorb such labor and their second reason is more emphasis is given to quantification than to quality therefore little attention is given to quality.

Five out of 9 (55.5 %) respondents of in Addis Ababa Institute of technology ,agreed that the current method of instruction is not producing labor that fits for the industry and 3 respondents who are 33.33% of the respondents agree with the effectiveness of the current method in producing labor fit for the industry and one respondent is not sure. The reasons those respondents raised as drawbacks of the system for not producing quality labor to the market are non practical education, curriculums are not market oriented and other gaps in the system.

# Chapter Five

# Findings Conclusion and Recommendation

## 5.1 Findings

The findings from the survey conducted on Industry-Institute Interface and from the interview conducted with a cross section of survey participants are summarized thus:

- ✓ All of the respondents believed with the importance of creating partnerships between higher education and industry and the majority of the participants felt the existence of linkage between these actors are at infant stage.

- ✓ Respondents suggested that, they see some kind of linkage in the areas of (i) Academic and Research support, and (ii) Business relationship (iii) Sponsorship of events like sponsoring programs of universities and students research.

- ✓ The benefits of the linkages were identified as (i) graduates fit for industry (ii) relevant research and that solves industry problems; and (iii) Increase in productivity and service quality of actors; (ii) Technological Innovations leading to improved performance; and (iii) Reduction in Training costs.

- ✓ All of the respondents opined the existence of opportunities for partnership between HEI and Industry and the following are raised as challenges for enhancing a further linkage: (i) framework for linkage (ii) existence of gap between the two, and (iv) slow growth of industrial sector in Ethiopia.

- ✓ Ideas presented as measures to overcome challenges included: (i) industries desire to get a tailor made training for their workers; ((ii) the need to form a platform to know each other; (iii) developing and implementing capacity building training to industrial managers; (iv) creating national understanding and awareness campaigns to make known the benefits and opportunities of alliances between the two entities;

- ✓ Industry expectations from higher institutions include: (i) sharing of latest knowledge and development in various fields of study; (ii) educating and training the industrial employees as to safety, hygiene, productivity and best practices; (iii) extending invitations to 'practitioners' to share their experiences and practical wisdom; and (iv) orientation of students about work ethics in firms.

- ✓ Higher education institutions expect the following from industries: (i) willingness to accommodate university/college students as apprentices; (ii) cooperation in providing information and data for research purposes (iii) Sponsorship of various events and activities of higher institutions;

## 5.2 Conclusion

From the study conducted about the linkages between higher education and industry, evidences are found to show the existence of alliances between the two entities. However, those links are not fully exercised and the benefits of strategic partnerships are not fully realized. Not only are the linkages between University and industry very weak, but there is a lack of coordination among Research Institutes found in the institute itself within units of larger Academic Institutes. The instructors in the university are found to form their networks with the industry via consultancy and training while the university did not take any step to utilize the personal link created with individual instructors. This indicates that there is an inability of the management to perceive the potential benefits and opportunities of the industry university collaboration.

In order to supplement the national development and to enhance the loosely held cooperation between the Industry and Institute efforts must be seriously taken, by the policymakers and top management in the industry, and the university administration and actions to strengthen the alliance should be taken.

## 5.3. Recommendations:

- A foundation, calling all stakeholders; for facilitating Industry –Institute collaboration should be established.
- Industry Institute Partnership offices found in the Universities need to be strengthen with manpower and financially so as to conduct workshops and symposiums with industry partners.
- Student and Staff Researchers of higher institutions must be encouraged to take up real-life and business-related problems seeking feasible and economical solutions to them.
- Industrial enterprises must come forward to sponsor, subject to the best of their financial capacity, the events and activities of higher educational institutions.

- Platforms for sharing of Information and research findings between the two entities should be arranged by responsible institutions and establishments.

- The interaction should be consistently evaluated, since constant interaction between university teachers, laboratory scientists and industrial entrepreneurs would solve many problems and considerably reduce the reliance on foreign expertise and technology.

- A small part of the earnings of business enterprises may be donated to the research funds set up by higher institutions.

- University industry Partnership offices in the industry shall give attention to provide On-the-Job Training (OJT) for industries. This will in turn attract industries to the institute and help them in accessing finance.

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**This Questionnaire is designed to collect data for writing an MA Thesis entitled University and Industry Linkage the case of AAU Institute of Technology.**

Dear Respondent the information obtained through this survey questionnaire will be Kept Confidential and it is only for the intended purpose; therefore please cooperate me in filling this survey questionnaire.

Thank you

## Part I Respondent Profile

**Sex** ☐Male ☐Female

**Age** ☐ < 25 Yrs ☐ 25-35 Yrs ☐35-50 Yrs ☐>50Yrs

**Qualification** ☐BSC/BA ☐ MSC ☐PHD ☐Other

**Your Position in the institute** _____

**Period of service in the university**

☐ < 1 Year ☐1-5 years ☐5-10yr ☐>10years

## Part II University Industry issue

1. Do you believe with the need to work in partnership with the industry
   ☐ Yes ☐ No
2. what kind of Benefit do you think ,will be acquired from the partnership
   _____
   _____
3. which of the linkages you think are the most appropriate/important for your University from the side of the industry
   ☐ Academic and research support
   ☐ Curriculum development
   ☐ Management/Administration
   ☐ Sponsorship/ programs, Education, Events/

☐ Business (Buyers & Users of research outcomes customers)

☐ Others specify _____

4. In your opinion are there opportunities to create linkages,If yes what are the opportunities

   i. _____

   ii. _____

   iii. _____

## Part III existing conditions

1. Is there any existing linkage between AAU institute of technology and the industry?

   ☐ Yes ☐ No ☐ I don't Know

2. If you know about the linkage what are the kinds of linkage have your institute with the industry?

   ☐ Academic and research support

   ☐ Curriculum development

   ☐ Management/Administration

   ☐ Sponsorship/ programs, Education, Events/

   ☐ Business (Buyers & Users of research outcomes customers)

   ☐ Others specify _____

3. What is the level of the link?

   ☐ Poor ☐ Fair ☐ Good ☐ Excellent

4. Do you have a personal link with industries

   ☐Yes ☐No

5. If you have a personal link in what capacity are you partnering the industry

   ☐ Owner/Shareholder

   ☐Management

   ☐Advisory/Consultant

   ☐Training

   ☐Researching with them

☐Others

6. Do you use your expertise/partnership with the industry to supplement your lecture, if yes to what extent?

_____

_____

7. If your response to Question no 4 is no what is your reason

   ☐ Lack of time

   ☐ Lack of access

   ☐ Others please specify _____

   _____

8. Do you have any information about the professional labor market for Graduates of technology, if you have how you do rate?

   ☐ More than enough ☐ Enough ☐ Small ☐ Almost none ☐ I don't know

9. The government directs its higher institution placement policy to a 70/30 approach do you think it fits to the labor market?

   ☐Yes ☐No

10. Please justify your answer?

_____

_____

11. Do you think the current method of education and training is generating fit for Industry graduates? ☐ yes ☐ No

12. In your response is no what are its drawbacks _____

_____

_____

**This Questionnaire is designed to collect data for writing an MA Thesis entitled University and Industry Linkage the case of AAU Institute of Technology.**

Dear Respondent the information obtained through this survey questionnaire will be Kept Confidential and it is only for the intended purpose; therefore please cooperate me in filling this survey questionnaire

Thank You!

Directions: Please make a thick mark for an alternative you agree,for those issues you have more than one answer you can freely make a thick mark on the issues.

**Part I: Profile of the Respondents**

1. Name of the Organization/Optional:

   ……..

Organization Type: Government / Sole Owner / Partnership / PLC / SC / NGO / Other (*tick one*)

*Please tick the appropriate answer for the following questions in this section:*

2. Nature of Position held: ☐ Top Management (President/Director/Manager)
   ☐ Middle Management (Head/Coordinator/Asst. Manager)
   ☐ Junior Mgmt / Others (Teaching /Admn./Junior Executive)
3. Major Activity: Teaching / Ednl. Admn / Business Admn/ Org.Admn / T & EA / Others

   ……..
4. Period of service in the present Organization/Institution:

☐ Less than 1 year ☐ More than 1 year but less than 5 years ☐ More than 5 years

5. Total Experience in the field/industry:

☐ Less than 1 year ☐ More than 1 year but less than 5 years ☐ More than 5 years

6. Age of the respondent:

☐ Below 25 years ☐ 25 to 40 Years ☐ 40 to 55 ☐ above 55 years

7. Gender of the respondent:

   ☐ Male ☐ Female

8. Educational attainment of the respondent:

   ☐ Below Diploma ☐ Diploma ☐ under Graduate ☐ Graduate ☐ Doctorate

**Part II: Industry-Institute Interface**

| In my opinion, Co-operation between this Institution and Industry exist (*tick appropriate one*) | | | | |
|---|---|---|---|---|
| For a Long Time | Recently | Very Recently | Rarely | Very Rarely |
| | | | | |

Can you identify the major categories of the linkages: (*please tick the appropriate ones*)

- ☐ Academic & Research Support (by providing data/information)
- ☐ Employment support(providing employment opportunities to students of the institution)
- ☐ Sponsoring (Program / Activity / Event / Position)
- ☐ Business Relationship (Service Provider/Materials Supplier, Customer, Intermediary)

In your view, approximate number of linkages, in each of the category as of now, would be: *(please tick in the appropriate box)*

| Category of Linkage (as exists now) | Very Few | A Few | Many | Very Many |
|---|---|---|---|---|
| Academic & Research Support | | | | |
| Employment support | | | | |
| Sponsoring | | | | |
| Business Relationships | | | | |
| Others (pl specify) | | | | |

**Part III: Benefits and Opportunities:**

Do you feel that partnerships between HEI and Industry would be beneficial? YES / NO

In your opinion, who would be the greater beneficiary? Higher Edn. // Industry // Both

If the answer to the previous question is "Higher Edn.", please RANK the benefits listed below:

| Sl. | Brief Description of Benefits | RANK (in your view) |
|---|---|---|
| 1 | Ability to produce 'industry-fit' graduate-employees (IF) | |
| 2 | Ability to enhance manpower-quality and employability (MQ) | |
| 3 | Feasibility to research and solve real-life/business problems (FR) | |
| 4 | Gain in 'practical wisdom' from practitioners' sharing (PS) | |

| | | |
|---|---|---|
| 5 | Contribution to Curricula Designing and Courses Devp't (CD) | |
| 6 | *Pl. specify:* | |

If you think 'industry' as the greater beneficiary, please RANK the benefits listed below:

| Sl. | Brief Description of Benefits | RANK (in your view) |
|---|---|---|
| 1 | Increase in productivity and service quality (PQ) | |
| 2 | Reduction in Training Costs (RT) | |
| 3 | Reduction in Costs of Recruitment and Selection (RR) | |
| 4 | Solutions to real-life / business / community / health issues (SI) | |
| 5 | Technological Innovations leading to Improved Performance (TI) | |
| 6 | *Pl. specify:* | |

If you think both are beneficiaries, why do you think so? (*give your view briefly*)

Do you feel more opportunities exist for partnerships b/n institution and industry?

☐ YES ☐ NO

What, in your view, are the evidences for that?

_____

_____

**Part IV: Challenges and Solutions**

Do you perceive challenges in creating partnerships between institution & industry?

☐ YES ☐ NO

If yes, what are the major challenges? (*tick all those appropriate*)

| Sl. | Major Challenge(s) in Partnerships b/n Institution and Industry | Tick Mark |
|---|---|---|
| 1 | Scarcity of Time | |
| 2 | Scarcity of Financial and Other Resources | |
| 3 | Lack of 'proactive' tendency on the part of employees/staff | |
| 4 | Inability to understand the benefits and opportunities | |
| 5 | Inadequate Training / Experience | |
| 6 | Personality Incompetence leading to 'missed opportunities' | |
| 7 | *Pl. specify:* | |

What measures do you suggest to overcome the challenges? _____

_____

_____

Who, according to you, are the key players in overcoming the challenges? (*tick appropriately*)

- ☐ The Policymakers and Top Management
- ☐ The Middle Level Executives
- ☐ Employees at all levels

Why do you think so?

_____

_____

_____

An interview guideline for collecting qualitative data from respondent instructors from AAiT and workers in the Industry for a thesis titled

## The link between University and Industry: the case of AAiT

Greeting and Introduction

1. Do you know any existing link between AAiT and industry?
2. How do you rate it if you think there exist?
3. If there is an existing linkage, what are the benefits acquired by the players in the partnership? Were there challenges?
4. Do you think there are opportunities for partnership? If so what are they?
5. Ho do you think a linkage can be created?
6. Is there any comment or suggestion you want to give me?