



The Role of University-Industry linkage in Implementing Competency-based Curricula in Public Higher Learning Institutions in Ethiopia: A Review of Literature

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Research Article

Abstract

Purpose: Policymakers are seeking to encourage Universities to become more entrepreneurial and engage more actively with the productive sector. The main objective of this article is to review the studies previously conducted with regard to the implementation of a competency-based curriculum in the higher institutions-industry linkage of Ethiopia.

Method: The review is based on the qualitative systematic review approach. A total of twenty studies on the Ethiopian curriculum were reviewed which includes 14 journal articles, 3 government or non-government reports, and 2 policy issues on University-Industry linkage and 1 working paper. The studies were accessed online through the Google search engine.

Result: The findings indicate that so far, the contribution of academic research in enhancing the country's economic development is minimal. Also no attention is given to the issues of responsibilities regarding the non-implementation of the competency-based curriculum in higher education institutions of Ethiopia.

Implications: The government has to do more in connecting the role of stakeholders such as Universities and business sectors, create an interlink between Universities, TVET, National Laboratories, the Financial Support Systems, Science & Technology Parks/Incubators, Businesses Enterprises and the National Quality System (NQS). Also the government or the concerned bodies need to develop a system of monitoring for the better implementation of the competency-based curriculum in higher education of Ethiopia.

Keywords: University-Industry linkage, Competency-based Curriculum, Higher education, Collaboration, Ethiopia

1. Introduction

Governments around the world have been promoting ties between academia and industry over the past forty years (Dill & Van Vught, 2010). Stimulating industrial technical progress is seen as a necessity to foster economic growth. Policymakers are seeking to encourage Universities to become more entrepreneurial and engage more actively with the productive sector. According to T.A. Johnson (2009), when Universities become more involved in promoting economic development, governments are likely to invest more in relevant research and education. One way to address this demand for relevance is by promoting further ties between institutions of higher education and the business sector. These relationships are particularly relevant in Ethiopia as most Universities have been established with a mandate to contribute to nation-building. Higher education institutions (HEIs) are now being asked to contribute to national economic growth.

This study aims to explore previous researches on the role of University-Industry linkage in Implementing Competency-based Curricula in public Higher Learning Institutions (HLIs) in Ethiopia. The literature on University-industry collaborations remains focused on advanced industrial economies, while very scanty attention is given to Ethiopia in this regard. In fact, to minimize the gap between the University and industry, developing a quality curriculum has a vital role. This is because the curriculum should mirror the training needs of the national economic market. Thus, the need to timely update curricula to address global economic demands and satisfy societal needs can only be overemphasized. Otherwise, the universities cannot produce competent, professionally skilled, and technologically proficient manpower. In this regard, A.T. Johnson, (2009) observed that a mismatch between employer demands and job applicants' skills, suggests that workforce training needs to be more closely aligned with the skills and competencies required for employment. Keeping this gravity of the issue, the present study is initiated to explore how the previous researches addressed the issue of University-Industry linkage and the implementation of the competence-based curriculum in the context of Ethiopian public higher learning institutions. The Specific objectives of the study include:

1. To identify what has been researched so far with regards to competency-based curriculum Implementation in public higher institutions of Ethiopia.
2. To determine the missing areas of studies in curriculum implementation of higher learning institutions in the country.
3. To identify issues that are given more attention in relation to curriculum implementation in public higher learning institutions.

2. Literature Review

A recent report on the state of university-industry linkages in Africa including Ethiopia revealed relevant findings that serve as a cautionary warning (AAU. 2012): but the higher education institutions amended proclamation 1152/2019 article "20 and 25 " sub-article "9" indicates that applied science Universities may develop curriculum that can jointly be offered with the industry and many offer dual degrees. Every institution shall have the responsibility to forge or re-create relationships with the industries for mutual benefits. From these two sub-

articles, one can understand that the relationship is supported by law, but still, there is no directives and enforcement basis of for the implementation of the competence-based curriculum in higher learning institutions of Ethiopia.

2.1. Curriculum Implementation Models

There are several curriculum implementation models. Some of them are outlined below.

2.1.1. ORC Model

'ORC' stands for 'Overcoming Resistance to Change'. This model rests on the assumption that the success or otherwise of curriculum implementation primarily depends on the impact the developer can make on the consumers, i.e., teachers, students, and the society in general. If we desire to change we must address people's misgivings, their misapprehensions, or other such related factors. We must point out to them that the curriculum incorporates, wherever possible and appropriate, their values, assumptions, and beliefs. And while addressing the persons within the system, we should remember that to get the desired result the subordinates should be motivated rather than ordered.

2.1.2. LOC Model

LOC is the acronym for the 'Leadership-Obstacle Course' model. This model treats staff resistance to change as problematic and proposes that we should collect data to determine the extent and nature of the resistance. We can do this by making sure that the following five conditions exist:

- i. the organizational members must have a clear understanding of the proposed innovation;
- ii. individuals within the organization must be given relevant skills so that they possess the capabilities requisite for carrying out the innovation;
- iii. the necessary materials and equipment for the innovation must be furnished;
- iv. if need be, the organizational structure must be modified so that it is compatible with the innovation being suggested;
- v. the participants in the innovation must be motivated to spend the required time and effort to make the innovation success.

2.1.3. Linkage Model

The 'linkage' model recognizes that there are innovators in research and development centers, Universities, etc. Educators in the field, however, find some of their attempts at innovations that are inappropriate for solving the problems. What is therefore needed is a match between the problems and innovations-the establishment of linkages. This model envisages two *systems*: the user system and the resource system. There has to be a link between these two systems. The resource system should have a clear picture of the curriculum user's problems if it is to retrieve or create appropriate educational packages. A successful resource system must proceed through a cycle of diagnosis, search, retrieval, fabrication of solution, dissemination, and evaluation in

order to test out its product. Thus, in the linkage model, the basic process is the transfer of knowledge.

2.1.4. RCA Model

The Rand Change Agent (RCA) model suggests that organizational dynamics seem to be the chief barriers to change. As in ORD and LOC models, it puts forward the following three stages in the change process:

Initiation: At this stage, the curriculum developers work to secure the support for the anticipated change. To support a change, such as a new program people must understand and agree that it is legitimate. Thus, curriculum implementation activity requires the personal backing of the individuals involved. For example, at this stage, we should inform the teachers about the need for change and how it might take place.

Implementation: At this stage, the proposed change, i.e., the new program and the organizational structure are adjusted to operationalize the change.

During this stage, the changes implemented become part of the established program. The assumption behind this is that the success of the implementation is a function of:

- i) the characteristics of the proposed change;
- ii) the abilities of the academic and administrative staff;
- iii) the readiness of the local community; and
- iv) the organizational structure.

Incorporation: The changes implemented will become part of the established program during the incorporation stage. At this stage, we outline the procedures to ensure the necessary personnel and financial support is provided for the program implemented.

The relation between these two systems is vital in realizing the implementation. The resource system should have a clear picture of the curriculum user's problems if it is to retrieve or create appropriate educational packages. A successful resource system must proceed through a cycle of diagnosis, search, retrieval, fabrication of solution, dissemination, and evaluation in order to test out its product. Thus, in the linkage model, the basic process is the transfer of knowledge from the University side and fulfillment of the labor force from the Industry side (Ornstein, 2018). Accordingly, the following conceptual framework will guide the review more clearly to understand the interaction between the two institutions.

2.2. The conceptual framework for the review

As indicated in Figure 1, universities (independent) have the mandate of fulfilling the structure and human resource need for the actual implementation of a competence-based curriculum. To fully implement the curriculum effectively the organizational structure needs to incorporate a unit or departments that could take the, responsibility and accountability of implementation. They also have to strengthen the capacity of their human resources in order to equip them with the necessary knowledge and skills of implementation of the competency-based curriculum, they also have to conduct a periodic evaluation to identify the inhibiting factors in implementation and take necessary corrective measures.

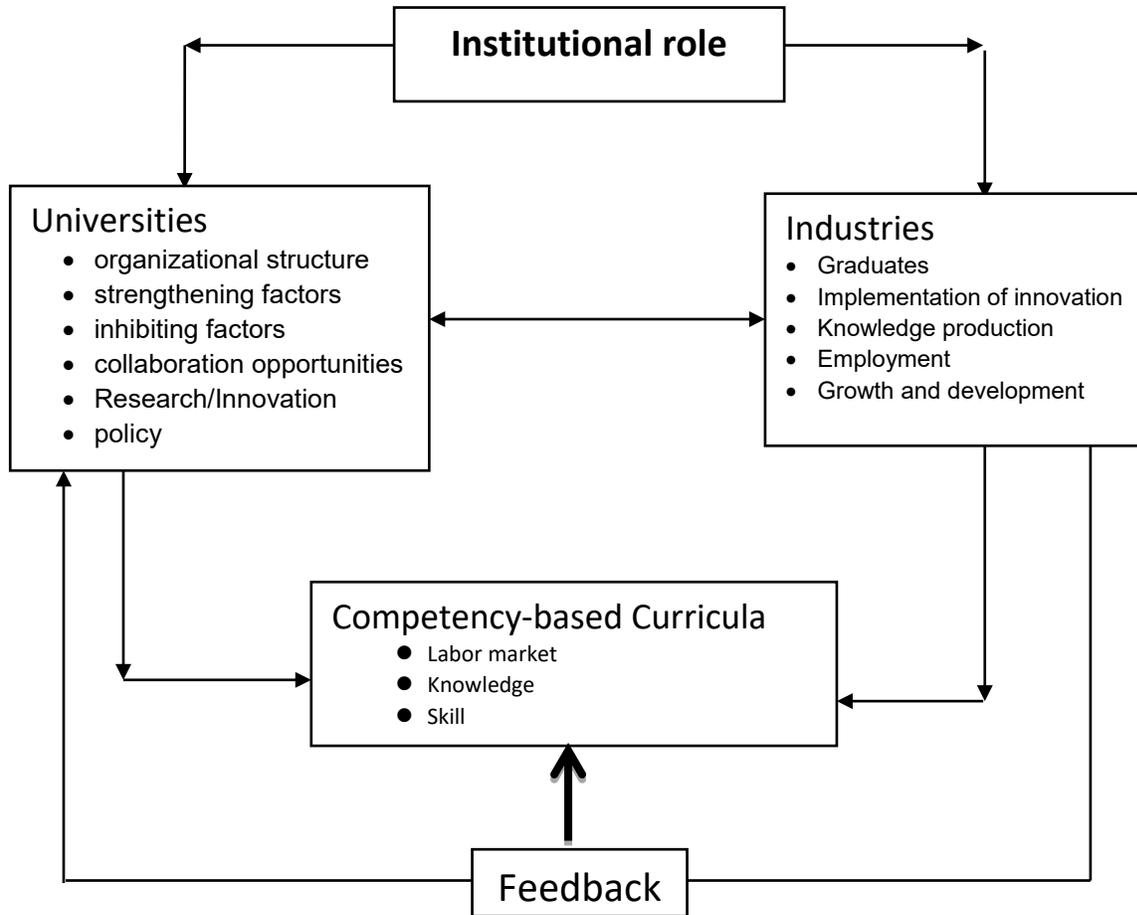


Fig. 1: Conceptual framework of the study

Universities need to make linkage and effective collaboration with Industries and business organizations to make them hold their graduates. Similarly, they have to produce new researches and innovations and disseminate to Industries and business organizations to put in practice and the University also has to formulate policies that enable the implementers to realize the intended objective of the University. On the other hand, the Industries (independent) receive graduates who are produced by the Universities and engage them in the work environment. Also, industries could receive research products and innovations from Universities and change the innovations to marketable elements. Furthermore, the graduates will be able to gain practical knowledge from the Industries that enable them to compete in the work world.

Similarly, the industry can help the graduates as a destiny in facilitating job opportunities and employability. This, in turn, reduces unemployment and can play a vital role in countries' development in general and self-reliance for individuals in particular. The development and design of competence-based curriculum (dependent) need to be market-oriented and should equip the learners with adequate and sufficient knowledge and skills that can help them to compete in the job world. As a result, the labor market absorbs the knowledge produced as well

as qualified manpower produced by the universities. Industries also provide feedback for the improvement of each of the parts and keep the system cyclical.

The basic questions developed in chapter one and the methods designed for data gathering were also viewed in relation to this framework. To address the "institutional role" (Universities and Industries) independent variables, it was assumed that public Universities and Industries plays an irreplaceable role in promoting the linkage and collaboration of the two institutes. Therefore, the roles of public universities and industries, factors inhibiting effective relations between the university and industry, factors strengthen industry-university partnerships and potential collaboration opportunities were raised in basic questions. Moreover, government attention is required by setting relevant policy platforms, organizational structures, strengthening factors inhibiting factors, collaboration opportunities, and Research/Innovation. To sum up, the Universities and industries are expected to establish clear and transparent duties and responsibilities of the institutions, to manage their roles and control the implementation of competence-based curriculum, which was considered in basic question No 1. Accordingly, alignment was made between the conceptual framework, research questions, and the method of data analysis. Consequently, each variable was examined as follows:

2.3. University

Higher education proclamation No. 650/2009 and the revised proclamation No. 1152/2019 states the objective of universities as to prepare knowledgeable, skilled, and attitudinally mature graduates in relevant disciplines with competence and to maintain a demand-based proportional balance of fields and disciplines so that the country shall become internationally competitive. Further, it has to conduct research in appropriate fields and design a relevant curriculum that meets the national standards set by the ministry (FDRE, 2009; FDRE, 2003).

2.4. Industry

Originally the word industry came from the Latin word 'industria' which denotes diligence (Encarta, 2010). Kannan (2012) described the industry as various companies, organizations, and institutions that could carry out transactions with their customers or provide services. It can also be classified into small, medium, and large scales based on the amount of their expenditure, human power, geographic distribution, and technical usage frequency. In some cases, it is also possible to view industries from the perspective of processing primary products into semi-processed or products. In reality, this ignores the service industries. Despite this, many people believe that Industry is the collective large-scale manufacturing of goods in well-organized plants with only a high degree of automation and specialization. Although this is a common industry example, it may also include other business activities that provide goods and services such as farming, transportation, hospital, and many others. For the purpose of this report, the industry is primarily operationalized in the infrastructure, manufacturing, and service industries.

2.5. University-industry linkage (UIL)

Also called university-industry partnership (Abdu, 2013) refers to the symbiotic relationship that exists between the university and industry with the support and facilitation of the government in the areas of research, consultancy services, students' practical attachment, innovation, technology transfer, and resource sharing so as to promote their common goals in particular and the country at large (Derbew, Mungamura, & Asnake, 2015: 73; Abraham, 2016: 2). In the context of this study, university-industry linkage/ partnership/ collaboration/ interactions are used interchangeably.

Merriam -Webster dictionary (2016) defines the word "linkage" as a connection or relationship between two or more things. It also defines as a part that connects two or more cases. In this case, it refers to a coordinated system of work among education and training, research institutions, and industries to engage in a collaborative manner (MoST, 2013). Moreover, it is creating partnership/ collaboration between universities and the industries, to obtain more resources, produce high-quality researches, ensuring that the graduates have the required skills, and increase innovation and technology transfer activities (Abdu, et al., 2012). Similarly, linkage in the context of this study shows the partnership or lateral ties between Ethiopian government universities and industries.

2.6. The theoretical framework of the study

The main objective of implementing any program in the education sector is to make students aware of it. For the effective accomplishment of learning, there are learning theories that guide the teaching process. Therefore, the underlying learning theories are functional theory, universal theory, integrated (cognitive) theory, and constructivist theory. Currently, the constructivist theory is the holding teaching model or learning theory that fits the skill-based approach. Therefore, this theory may fit the purpose of this specific review title.

2.7. The Concept of Competence

The concept of competence can bridge the world of education, training, knowledge management, and informal learning. There are a lot of examples of competence definitions. The concept of 'competence' or 'competency' is the subject of ongoing discussion (Banbul Shewakena and Sintayehu Belay 2017). According to the authors, the researchers in the field of competence have given various definitions for what competencies are: permanent distinctive traits and characteristics which determine performance; distinctive characteristics which differentiate the successful performer from the rest; an ability to reach goals; inner personality traits that allow a person to cope better with a given task, role or situation; knowledge, skills, abilities and other characteristics demonstrated at work, etc. However, there is no set definition for the term competence. Debates on the difference between competence and competency are still ongoing.

2.8. The Role of Industry in Curriculum Development

Collaboration between academia and industry is increasingly a critical component of efficient national innovation systems (World Bank, 2013). World Bank also argues that the collaboration between universities and industries is critical for skills development (education and training), the generation, acquisition, and adoption of knowledge (innovation and technology transfer), and the promotion of entrepreneurship (start-ups and spin-offs). These arguments insisted on the paramount importance of industry involvement in the curriculum development process. Likewise, an industry partner's workforce investment lies in the proper alignment of career and technical education and academic instruction (HCRC, 2009).

2.9. The Role of Industry Competency Model in Curriculum Development

A competency is the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform “critical work functions” or tasks in a defined work setting (U.S. Department of Labor, Employment & Training Administration, 2015). According to United States' Employment and Training Administration (2015), competencies often serve as the basis for skill standards that specify the level of knowledge, skills, and abilities required for success in the workplace, as well as potential measurement criteria for assessing competency attainment.

2.10. Summary of the related literature

The litterateur identified that the most significant influence on the college curriculum since the 1960s has been the demand for measured or assessed outcomes that would ensure the competency and proficiency of graduates. A way to conceptualize the relation between education and the world of work is through competency-based education (Kouwenhoven, 2003). Therefore, the development and implementation of higher education learning institutions may not implement in such a way that this notion was properly practiced. Hence, Ethiopian higher education learning institutions' curriculum implementation needs to be in-lined with the needs of the job market of the country.

As the analysis of the reviewers indicated above, at the institutional level, universities in Africa including Ethiopia, have long been facing funding difficulties due to limited state resources. Universities face constraints in building research programs in relevant fields of science and technology that would be of interest to the industry. Generally weak research capacity and insufficient R&D funding inhibit a more sustained research role between Ethiopian public Universities and Industries. Therefore, the government and concerning bodies have to do more to implementing a competency-based curriculum to boost productivity in general and to increase the rate of employability in particular in the country.

Public Universities have to adjust their organizational structures fully engage in the implementation of University-industry linkage in implementing the competence-based curriculum by reducing constraints such as lack of offices, material resources and expertise to handle industry partnerships and technology transfer effectively. Furthermore, Universities and concerned bodies have to increase the number of science parks and technology incubators in

academic institutions, because so far as indicated in the review literature only a small percentage of universities surveyed reported being involved in managing science parks and engaging in technology transfer; and the reviewer suggests that support for establishing and managing business incubators and science parks would respond to the needs and priorities of Ethiopian public universities.

3. Method and Materials

3.1. Description of Study Area

Located in the Horn of Africa, Ethiopia is a country of over 91 million people. Forty-four percent of the population is under the age of fifteen years (Bishaw, 2012), Unlike most other African countries, Ethiopia did not experience significant colonization (except for a brief Italian occupation from 1936 to 1941) and linguistic groups were diversified and living in harmony and hosting more than 95 million inhabitants and home to broad and diversified groups.

3.2. Research Design & Data Sources

This is an exploratory research based on an extensive survey of published research. It analyzes and examines the existing literature from previous studies, national record qualitative information obtained from secondary data sources such as journal articles, books, chapter books, and official document reports used as data sources. In this paper, a total of twenty studies on Ethiopian curriculum issues published during the years 1992 – 2015 were reviewed. These include *14 journal articles, 3 (government anon-governmental organization reports), and 2 policy issues on University-Industry linkage and 1 proceeding paper.* Most of the studies were empirical studies in which data were collected, analyzed, and discussed in different forms.

3.3 Data Gathering Instruments

The studies were accessed online through Google Scholar, Google, and ProQuest dissertation and thesis were searched by using different combinations of the words "Ethiopia" "stakeholders" "curriculum" "role" "education" and Also, a general search was performed on Google to access reports of international organizations that are pertinent/relevant to Ethiopian education stakeholders.

3.4. Data Analysis

Upon reviewing the reports and articles, the researchers generate four themes, and data were grouped according to the themes. The four themes include: (1) the roles of University-Industry Linkage in implementing competency-based curriculum; (2) Factors affecting the relationship between Universities and Industries; (3) Factors affecting the effective relationship, and (4) Potential collaboration opportunities.

Table: 1. Number of reviewed studies categorized by their research focus

category	Research focus	Number of studies
1	The roles of UIL in implementing competency-based curriculum	2
2	Factors affecting the effective relationship between Universities and Industries.	4
3	Factors strengthening University-Industry partnership	7
4	Potential collaboration opportunities	7
Total		20

4. Results and Discussions

4.1. Studies on the roles of University-Industry Linkage in implementing competency-based curriculum

As indicated in Table 1, two out of twenty studies included in this review dealt with the roles of University-Industry Linkage in competence-based curriculum implementation in Ethiopian higher education institutions. The topics of these studies can be classified as Competency-Based Curriculum in Higher Education: A Necessity Grounded by Globalization. (Jansen, J. D., 2002)). This study gave more emphasis on the importance of a competency-based curriculum and its pros and cons.

The study highlights the issue of responsibility in implementing the competence-based curriculum. It also indicated that for inculcating and facilitating competency-based curriculum compelled by the global issues demand the collaborative administration with the institutes those already have been practicing and administering. There are various institutions of western as well as advanced eastern countries that are already in the stream can cooperate in adopting the curricula. This global perspective can give us a lesson to competency-based curriculum development practices in Ethiopian.

The next topic under this category was “The Role of University-Industry Linkage to Produce Graduates with Employable Skills Analysis of Banking and Finance Graduates’ Attributes from Educators and Industries Perspective” (Shewakena, 2017). This study was dealt with the role of university-industry collaboration in producing banking and finance graduates with employability skills from instructors and industries viewpoint. Finally, the researchers come up with the conclusion that Integrating employability skills and competency required for the successful on-the-job performance of graduates need strong collaboration between university and employers (industries) throughout the curriculum development process.

4. 2. Studies on Factors affecting the effective relationship between Universities and Industries.

The second category of this review was dealing with factors inhibiting effective relations between the University and Industry. The Composition of this batch of studies can be listed as Determinants of University-Industry Linkage: Evidence from Dire Dawa City EstifanosYilma and Melaku Alemu (2018), Engaging excellence? Effects of faculty quality on university

engagement with industry Markus Perkmann,, Zella King, Stephen Pavelin (2011), "The Challenge and Prospects of Small Scale Enterprise in Ethiopia: A Survey of Some Selected Small Scale Enterprise in Addis Ababa City" and "Survey on Factors Affecting University-Industry Knowledge Sharing Practices: The Case of Addis Ababa University College of Veterinary Medicine University College of Veterinary Medicine" (Mohammed Getahun, 2016), and Survey on Factors Affecting University-Industry Knowledge Sharing Practices: The Case of Addis Ababa University College of Veterinary Medicine (Assefa, 2018).

The Central idea of the above four studies can be summarized as the importance of linkage of higher education institutions with various industries for a given country sustainable development, the need for interaction between universities and Industries in various areas (Estifanos Yilma, Melaku Alemu, 2018).

The need for industry involvement measures that are broader than commercialization and indicate actual collaboration, i.e. collaborative research, contract research, and consulting (Perkmann, King, & Pavelin, 2011). The important role of small-scale industries in the developed countries The important role of small-scale industries in the developed countries which suggests that the challenges and problems of the SSEs in Ethiopia are having many centers and hence can only be effectively tackled by a multi-dimensional and concerted approach by all stakeholders i.e. the governments and their agencies, banks, regulatory authorities, tax authorities, the employees of SSEs, multilateral and bilateral agencies and donors (Getahun, 2016).

On the other hand, factors that affect university-industry knowledge sharing practices are identified as individual factors such as willingness, organizational factors and technological factors (availability of up-to-date ICT infrastructure and updated website for sharing knowledge) are factors that have a significant impact on knowledge sharing practices (Assefa, 2018)

4. 3. Studies on Factors affecting the effective relationship

The third category encompasses six studies out of the twenty-one studies based on their theme of factors strengthening University-industry partnership, and can be listed as follows: "Higher Education Development for Ethiopia: Pursuing the Vision (WORLD BANK, 2003)," "Historical Analysis of the Challenges and Opportunities of Higher Education in Ethiopia (Bishaw, & Melesse, 2017)", Industrial policy and development in Ethiopia: Evolution and present experimentation (Synonomouse, N.D.), Political economy of the Ethiopian Science Granting Council (Tigabu, 2017), Productive Capacity and Economic Growth in Ethiopia (Shiferaw, 2017) and The Public-Private Divide in Ethiopian Higher Education: Issues and Policy Implications (Nega, 2017).

The above studies have given more attention to economic development and how higher education institutions are crucial to enhance and foster the economic development of Ethiopia. For instance, to strengthen this notion, World Bank (2003), stated the following:

The system's current need is not for further reform, but rather: (i) to design effective implementation strategies and action plans for operationalizing the reforms; (ii) to strengthen national capacities to carry out those strategies; and (iii) to ensure that the reforms are fiscally sustainable within the overall sector budget and within the financial resources available to higher education; (iv) to foster greater private sector involvement in the higher education expansion program; and (v) to improve the linkages between the labor force demands of an emerging knowledge economy and instructional programs offered at the universities. This in turn helps for Productivity gains that are generated by national innovation systems in which tertiary education institutions play a fundamental role.

The study further identified that at the level of academic programs, new degree courses are being introduced in response to anticipated labor market needs that underpin the nation's economic development strategy and to prepare its citizens for democratic participation in civic and social affairs. Graduate program enrollments are expanding rapidly in the effort to increase the supply of academic staff for the expanding system. This study doesn't give attention to the role of Universities-Industry linkage in preparing the graduates for the labor market. Rather, it emphasizes the output and supply and demand part of the higher education institutions. While the crucial issue is not only about producing the labor power but the emphasis should be given to the relevance of the output to the labor market.

The study conducted on Historical Analysis of the Challenges and Opportunities of Higher Education in Ethiopia by Alemayehu Bishaw and Solomon Melesse (2017), indicated that the number of graduate unemployment has increased and yet, the graduates are not well equipped with the necessary skills to participate in the world of work effectively. Furthermore, the study identified that the contribution of higher education to the country's sustainable and speedy development is vital. Therefore, this study directly shows that there is a strong need for University-Industry linkage to alleviate unemployment in the country generally and to enhance sustainable self-reliance for the individual citizen in particular.

The study conducted on the "Industrial policy and development in Ethiopia" (Synonomouse, N.d.) dealt with the choices, implementation processes, and outcomes of the Ethiopian present industrial policy. And it further highlighted the need for a regular review of the policies and instruments to be instituted with the aim of identifying emerging bottlenecks industry development in Ethiopia. And more importantly, the need for policies to be framed with a view of addressing constraints along the whole value chain and also horizontal linkages. The study highlights the issue of policy formulation in enhancing the economic development of the country, it couldn't give any emphasis on the labor market and the way forward to address the issue of unemployment in the country in general and for University graduates in particular. The study lacks the role of University-industry linkage in alleviating poverty.

The other study categorized under this them was the "Political economy of the Ethiopian Science Granting Council (Tigabu 2017), this study dealt with the historical development of the Ethiopian economy from the early 1990s to the present. The study gives emphasis more to the development of a research funding mechanism within the Ministry of Science and Technology (MoST) in priority areas, such as agriculture, agro-processing, biotechnology, construction,

chemical, and pharmaceutical sectors. Furthermore, it points out that the R&D intensity of the country has been insufficient to contribute to the country's industrialization substantially. This indicates that the linkage between University-industry more venerable to mismatch of graduates with skills needed by the industries, because there is no opportunity for the Universities and industries to understand each other and plan for mutual benefit and to work against the countries development by minimizing unemployment.

The following study under this them is the study conducted on "Productive Capacity and Economic Growth in Ethiopia:" (Shiferaw 2017), this study attempts to examine the process of building productive capacity in Ethiopia over the past two decades and the roles played by the state, government, the private sector, foreign firms and development partners. It also emphasizes the issue of Productive capacity as the natural resource potential, accumulation of human capital, and the institutions that facilitate inclusive and sustainable economic growth. This process also encompasses the nurturing modern entrepreneurial skills in the private sector and fostering innovation. The Central point of the study was to connect productivity with the labor market. But it ignores the role of University-industry linkage in boosting the economy and enhancing productive human capital.

The next study under this category is "The Public-Private Divide in Ethiopian Higher Education: Issues and Policy Implications"(Nega, 2017), this study gives more emphasis to the current issues on the public-private divide in the Ethiopian higher education landscape and their policy implications. It critically examines issues related to legal and regulatory frameworks in order to understand the public-private divide in the Ethiopian higher education context.

The article was based on two premises. The first pertains to the idea that public and private higher education providers are commonly required to meet the quality and relevance imperatives of their salient stakeholders as stipulated in the higher education proclamation. The second concerns the argument that an enabling policy and legal framework is crucial for the private higher education sector to play a key role in addressing the social demand for higher education, and thereby contribute to the socio-economic development of a country. The findings of the article revealed that private higher education providers are playing a significant role in addressing the unmet social demand for higher education through increasing access and thereby creating employment opportunities.

The essence of the article was good in that it indicates the way private higher institutions can play a great role in producing graduates for the job market. But what is so important here is not only producing the labor but connecting and linking with industries could play a vital role for the betterment of the countries economy in general and for reduction of unemployment in particular. Therefore, both the public and private higher education institutions need to make a strong linkage with industries to realize the achievement of country development goals.

The seventh study in this category is "What makes industry-university collaboration succeed. A systematic review of the literature Robert" (Rybnicek, Roland & Königsgruber, 2018), this study explores more or less Industry–university collaborations (IUCs) that it has received increased attention in management practice and research. The need for innovation in today's business environment and the ambition of policymakers to commercialize academic knowledge intensify

this trend. It further indicates that although research has devoted considerable effort to find the determinants of success for inter-firm collaboration, much less is known about IUCs.

Furthermore, the review finding indicates that IUCs are increasingly important and it is in the interests of governments, policymakers, researchers, and practitioners that such collaborations are successfully implemented. While the advantages and potential of these collaborations are well recognized, there are at the same time numerous hindrances and challenges to be met, which can lead to failure. In this review article, the reviewers identify factors that influence the success of an IUC and derive recommendations from the literature for a successful realization and implementation of such a partnership. These insights will help to establish fruitful collaborations between these two very different types of organizations.

To sum up, the collaboration of both institutions needs the commitment of the leaders to realize the intended goals of their respective organizations and to enhance the economic development of the entire country in general and for the reduction of unemployment in the country.

4. 4. Studies on Potential collaboration opportunities

This category is the fourth category of this review, under this category; attempts have been done to explore the potential collaboration opportunities for University-industry in Implementing Competency-based Curricula in public Higher Learning Institutions in Ethiopia. Accordingly, out of twenty studies included in this review seven studies are incorporated under this category and can be listed as follows." National Science, Technology and Innovation Policy: Building Competitiveness through Innovation October, Addis Ababa Ethiopia (The Federal Democratic Republic of Ethiopia, 2010),

The Links between Academic Research and Economic Development in Ethiopia (Mulu Nega, 2017), The role of universities in innovation and sustainable development (Gorge, V., (2009), the role of Universities in learning unit of S African currency: the main unit of South African currency unit of S African currency: the main unit of South African currency(RAND Corporation, 2001), The Role of University-Industry Linkage to Produce Graduates with Employable Skills: Analysis of Banking and Finance Graduates' Attributes from Educators and Industries (Shewakena & Belay, 2017), University-Industry Linkage Practices, Determinants and Challenges Theoretical and Empirical Article Review: Lessons for Effective and Successful Collaboration (Abebe, 2016), Strengthening University-Industry Linkages In Africa: A Study on Institutional Capacities and Gaps, Strengthening University-Industry Linkages in Africa. John Ssebuwufu, Teralynn Ludwick & Margaux Béland (2012). were the major studies concluded.

From these studies, the first study which was conducted by The Federal Democratic Republic of Ethiopia (2010), emphasized the system in that system is believed to be the place where the motor of the entire system lies. The study indicates that these systems include the following sub-systems: The Universities and National Laboratories, the TVET System, the Financial Support Systems, Science & Technology Parks/Incubators, the National Innovation Park-System, Businesses Enterprises and the National Quality System (NQS). These are the major actors that will be engaged in the actual work of technology transfer, diffusion, and research; and those who provide the financial, technical, legal, and infrastructural support to these activities. The

study recommended that the Ministry of Science and Technology will establish its own research institutes and science and technology support centers as deemed necessary particularly in strategic areas that require special attention.

From these assumptions indicated above, we can conclude that there is a need to create an interlink between Universities, TVET, National Laboratories, and other sub-systems such as the Universities and National Laboratories, the TVET System, the Financial Support Systems, Science & Technology Parks/Incubators, the National Innovation Park-System, Businesses Enterprises and the National Quality System (NQS). And this will play a vital role in contributing to poverty reduction and unemployment constraints of the country.

Similarly, the second study which was conducted on *The Links between Academic Research and Economic Development in Ethiopia: The Case of Addis Ababa* aims to examine the major issues concerning the links between academic research and economic development in Ethiopia by considering the Addis Ababa University as a case. The study was based on two premises. The first pertains to the idea that universities being one of the actors in knowledge production play a central role in enhancing the economic development and competitiveness of a country through their missions of academic research and the formation of skilled human capital. The second concerns the argument that a strong collaborative link between Universities and the industry is crucial in enhancing scientific and technological innovation process and commercialization of academic research through technology transfer that is necessary for economic development.

The findings of the study indicate that the contribution of academic research in enhancing the country's economic development is minimal at Addis Ababa University in particular and in the country in general. The barriers to the lack of a strong link between university and industry in terms of academic research and innovation are discussed and documented.

Finally, the researchers suggested that the implications for a strong partnership among universities, industry, and government in enhancing the contribution of academic research and innovation to the country's development. The very interest of this review was also to explore what has been studied on the issue of University-Industry linkage and the way it could be strengthened for future engagement of the two institutes to enhance the opportunities of employability of the nation. Therefore, the findings and suggestions forwarded by the researcher were vital for the collaborations of University-Industry, and linkages between the two may contribute to the development of the country and achieve the final goals of the two.

The third study was the study conducted on "The role of universities in innovation and sustainable development" (Gorge, V., (2009), it indicates that the role of universities in innovation and sustainable development is most valuable for the private and public sector in five main areas: (a) contributing to fundamental research; (b) combining existing knowledge; (c) education and training (curriculum development); (d) creating space for open exploration of ideas; (e) community involvement. Hence, what matters is not only technology development, but also contributions in terms of assimilation and absorption of these factors by various social groups, such that the result is a change in behavior or practices. This study also emphasizes the

broad necessity of the collaboration and their advantages for different developmental issues, and it supports the main purpose of the review.

The role of Universities in learning Regions (David, 2003) was the fourth study reviewed under this category. It was dealt with the Universities' economic relationships with their regions can be divided into spending impacts and knowledge effects. Spending impacts refer to the effects of consumption and capital spending by Universities and their staff and students on income and employment. Knowledge effects refer to the benefits of University activities, notably the production of highly educated graduates and the production and dissemination of knowledge. The study further identified that from several reviews most of the role of Universities in regional development was confirmed to spending impacts. It also indicated that the different economic processes involved and includes several case studies of individual Universities on similar issues.

To sum up this study encourages there is a need and countries should engage in linking Universities with economic sectors to enhance economic development for the nation in general and reducing unemployment in particular. The next study was the study dealt with "The Role of University-Industry Linkage to Produce Graduates with Employable Skills: Analysis of Banking and Finance Graduates' Attributes from Educators and Industries and Industries Perspective"(Banbul Shewakena, Sintayehu Belay, 2017), The major aim of this study was to examine the role of university-industry collaboration in producing banking and finance graduates with employability skills from instructors and industries viewpoint. Finally, the researchers commended the need to develop competency models for each occupation or job group so as to define graduates' successful performance in a particular work setting via their demonstrable competencies.

The sixth study incorporated under this category was University-Industry Linkage Practices, Determinants and Challenges Theoretical and Empirical Article Review: Lessons for Effective and Successful Collaboration (Abraham Abebe Assefa, 2016), This article review has systematically reviewed scholarly articles on university-industry linkage to find out best practices, determinants, and challenges for sustainable collaboration. And the result indicates that; individual, organizational and institutional factors are identified as determinants and establishing multidisciplinary research centers with industry buy-in, student internship and job placement programs, entrepreneur-in-Residence programs, establishing University-Industry Liaison Office and leadership commitment are keyed out as best practices for effective university-industry linkage.

The author identified that the centralized education system, poor leadership, huge number of students, low numbers of qualified faculty, aging faculty, inadequate research infrastructure and teaching rather than research-focused mandates, the over-emphasized role of the government which coupled with challenges in finance explains why the majority have remained teaching university rather than research and technology outreach center.

Furthermore, it was concluded that establishing a technology fund, supporting the establishment and management of science parks and technology incubators for technology transfer, private sector active participation in curriculum development, integration of the

private sector, the research community and government agencies, establishing organizations and formulating programs that connect research with business and serve as an interface between idea creation and business generation are recommended suggestions to develop a collaborative culture, improve the innovation system and facilitate greater university-industry collaboration. Finally, this review literature gives lessons to other countries such as Ethiopia where there are a number of graduates each year from Universities, and the need of linking Universities with industries is mandatory to enhance economic development and to reduce unemployment of the nation.

The last part of this category was "Strengthening University-Industry Linkages In Africa: A Study on Institutional Capacities and Gaps, Strengthening University-Industry Linkages in Africa" (John Ssebuwufu, Teralynn Ludwick & Margaux Béland, 2012), it was dealt with the contribution to a deeper understanding of university linkages in Africa by helping to establish some basic markers to determine where African universities are in terms of their capacity to establish, manage, and govern collaborations with the productive sector. Furthermore, recognizing the economic realities of the countries in which African HEIs operate, it may be more appropriate to apply a more encompassing definition of the industry - one that includes all aspects of the productive sector, including agriculture and the informal sector-when developing strategies and interventions to strengthen university-industry linkages.

5. Conclusions and Recommendations

5.1. Conclusion

Most of the reviewed journal articles emphasized the role of University-Industry linkage in one way or another to enhance economic development. The reviewed articles dealt with the Ethiopian context of University-Industry linkage and collaboration. But most of them were not concerned regarding the role of higher learning institutions and Industries in implementing the competence-based curriculum as they are mostly responsible and accountable for the success or failure of the implementation. HEIs, as being the actors in knowledge creation, play the central role in enhancing the economic development and competitiveness of a country through their missions of academic research and the formation of skilled human capital. Furthermore, the argument that a strong collaborative link between Universities and the industry is crucial in enhancing scientific and technological innovation process and commercialization of academic research through technology transfer is necessary for economic development.

The findings of most of the studies indicate that so far, the contribution of academic research in enhancing the country's economic development is minimal. The barriers to the lack of a strong link between university and industry in terms of academic research and innovation are discussed and documented. Finally, the researchers suggested that the implications for a strong partnership among universities, industry, and government in enhancing the contribution of academic research and innovation to the country's development.

The studies conducted on the role of universities in innovation and sustainable development identified five main areas: (a) contributing to fundamental research; (b) combining existing knowledge; (c) education and training (curriculum development); (d) creating space for open

exploration of ideas; (e) community involvement. Hence, what matters is not only technology development but also contributions in terms of assimilation and absorption of these factors by various social groups.

To sum up most of the studies reviewed in this article encourages the government to pave the way for University-industry engagement and make conducive environments in linking Universities with economic sectors to enhance economic development for the nation in general and reducing unemployment in particular. Furthermore, there should be a legal framework that monitors the implementation of both institutions. To implement any project or a decision, there should be someone responsible for this. Without giving responsibility to a certain body or an institution, there would be no progress. Therefore, the government or the concerned body needs to develop a system of monitoring the implementation of the competence-based curriculum in higher education in Ethiopia.

5.2. Recommendations

As revealed in the conclusion part above, the government, has to do more in connecting the role of stakeholders such as Universities and business sectors, create an interlink between Universities, TVET, National Laboratories, the Financial Support Systems, Science & Technology Parks/Incubators, the National Innovation Park-System, Businesses Enterprises and the National Quality System (NQS). And this will play a vital role in contributing to poverty reduction and unemployment constraints of the country. The government has to pave the way for University-industry engaged and make conducive environments in linking Universities with economic sectors to enhance economic development. To sum up, the government or the concerned body needs to develop a system of monitoring for the better implementation of the competency-based curriculum in higher education of Ethiopia.

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