Innovations

The Role of Indian and Ethiopian Universities in Building a Knowledge-Based Economy: A five-dimensional Comparative Study

Teshome Gudissa Degu, Ph.D.
Dilla University, Ethiopia

Corresponding Author: **Teshome Gudissa Degu, Ph.D.**

Abstract
It is a well-known fact that knowledge-based economies are essential for nations to survive the effect of globalization. In the twenty-first century, a knowledge-based economy is vital for competitiveness. A knowledge-based economy is one in which technological and information development, distribution, and application are vital to economic activity and long-term growth. The study's overarching goal is to analyze the contributions of Indian and Ethiopian universities to the development of a knowledge-based economy. A qualitative comparative analysis methodology was used in this investigation. A total of twenty participants were chosen (ten Indian professors who had previously taught at Indian institutions and who are currently hired by some Ethiopian universities, and ten Ethiopian professors) were chosen from a sample of five Ethiopian universities. Primary data was gathered through in-depth interviews and focus group discussions. Furthermore, because secondary sources were so crucial, pertinent information on universities in India and Ethiopia was acquired from published works. The data analysis procedures for this study included transcribing the interview recordings, reading the transcriptions several times to get a sense of the entire interview, starting the coding process, reviewing all codes to determine which codes did not work or combining ideas from different codes, and breaking down the codes that contained too much data into secondary codes. Human capital formation, academic publication, innovation, start-ups, and university-industry linkage were used as criteria to compare the universities of both countries. According to qualitative data analysis, Indian institutions are much ahead of Ethiopian universities. India is a global leader in human capital formation, with one in every four graduates coming from the Indian educational system. Moreover, universities in India have notable publication records and good culture of university-industry linkage. Ethiopian universities are either in their infancy or underperforming in terms of human capital generation, research, innovation, startups, and university-industry collaboration.

Keywords: *1.Knowledge-based economy, 2.Education, 3.Higher education, 4.Development*

1. Introduction

It is a well-known truth that for nations to survive the pressures of globalization, knowledge-based economies are required (Tchamyou 2017; Parcero and Ryan 2017; Vadra 2017). Over the last decades, significant policy papers from the Organization for Economic Cooperation and Development (OECD) and the World Bank have focused on the knowledge-based economy. The knowledge-based economy is critical for competitiveness in the twenty-first century (Tchamyou 2017).

According to the Organization for Economic Cooperation and Development (OECD), a knowledge-based economy is one in which the development, distribution, and application of technology and information are critical to economic activity and sustainable growth (OECD, 1999). Individuals' adaptive and creative thinking skills are required in such an economy to find answers to societal challenges. A knowledge-based economy generates new and expanded job opportunities. This is because it needs a staff capable of successfully managing extremely changing trends. People with the necessary abilities are thus hired in new high-technology enterprises and areas. As a result, a knowledge-based economy encourages investment in the development of a highly trained labor force (Fernandez, 2001). Research, technical advancement, and a highly skilled workforce lead to increased production, which boosts economic growth and development.

USA, Japan, and Europe have mastered the relevance of a knowledge-based economy inside this policy framework, which has inevitably determined the pattern of economic development in the world arena. While other developing countries in Latin America and Asia have been catching up with calculated moves emphasizing the importance of a knowledge-based economy in the pursuit of regional and national goals (Tchamyou, 2017), Africa's overall index of the knowledge economy has been declining since the beginning of the third Millennium (Anyanwu, 2012).

2. Research Objectives

The general objective of the study is to assess the contributions of Indian and Ethiopian universities toward the building of a knowledge-based economy in their countries.

The specific objectives are to:

- Understand the views of Indian professors about the role of Indian and Ethiopian universities in building a knowledge-based economy
- Understand the views of Ethiopian professors about the role of Ethiopian universities in building a knowledge-based economy
- To compare Indian universities with Ethiopian counterparts regarding their contributions to a knowledge-based economy
- To draw some lessons from Indian universities on issues of knowledge production, utilization, and application

3. Literature Review

Universities and Knowledge Economies

International agencies such as the World Bank strongly advocate the positive impact of higher education in the development of knowledge-based economies. Investment in quality education and training creates significant external advantages that are crucial for knowledge-driven economic and social progress (Ramady, 2010). Universities are an important component of a knowledge-based economy. The modern university's role extends beyond teaching and performing primary research. It considers science, technology, and innovation to be the pillars of a knowledge-based economy. Universities do so to link their objectives to lead nationally and be recognized internationally with their respective countries' global agendas to develop a sustainable economy (Godin, 2004). Thus, universities strategically interact with the commercial and public sectors with the primary goal of exchanging knowledge to produce and use research findings and research-based education to boost competitiveness and sustain competitiveness.

Universities are powerful institutions for commercializing knowledge and significant drivers of regional innovation systems. This is largely based on empirical research conducted in some of the world's most active

regional economies, including Route 128 in Massachusetts and Silicon Valley in California (Huggin & Johnston, 2009). These claim that enterprises in other places may lack the 'absorptive ability' needed to properly profit from and utilize university research. As a result, it is critical not to extrapolate findings from a few select or 'exemplar' regions to many more traditional regional economies (Torre, 2008). Human capital produced by universities is one of the main benefits of universities and a key type of research commercialization. While less direct than the commercialization process, students who work for local businesses or start their businesses are important indicators of knowledge transfer. Furthermore, the function of graduates as start-up generators is becoming more widely recognized. According to a recent study, graduate start-ups are now at least on the same scale as academic start-ups. Graduate start-ups in the UK were fast increasing, with the number increasing from 179 to 2,045 between 2000 and 2009, an 11-fold increase in nine years (Gallarotti, 2013).

Governments have recently imposed pressure on universities by pushing them to undertake more applied research than conventional basic research. Three major trends have affected the university system: 1) the linking of government funding for academic research with economic policy, 2) the development of more long-term relationships between firms and academic researchers, and 3) the direct participation of universities in commercializing research (Harrison, Leitch, & McMullan, 2013). As a result, while universities continue to fulfill their traditional roles of conducting primary research and training highly qualified individuals, they have come under increasing pressure in recent years to expand their basic research activities to include more applied research that is more relevant to industry, as well as to disseminate technical knowledge and provide technical support to the industry. This change reflects shifting government expectations that government investments in fundamental research should yield a measurable economic return (Wolfe, 2005).

Indian Higher Education

India is no stranger to higher education. The importance of education was well recognized in India. 'Swadeshi pujyate raja, vidwan sarvatra pujyate' in Sanskrit simply means: "A king is honored only in his own country, but one who is learned is honored throughout the world." The institution of higher learning in British India did not start with the establishment of the university system in 1857. Its origin can be traced back to the start of British rule in India—to the time when the East India Company made the crucial transition from being a merchant trader to a landowner and a collector of taxes during the mid and late eighteenth century. Institutions of higher learning had always been a part of the colonial apparatus in British India. India has the third largest higher education system in the world, after the US and China, according to the World Bank. The higher education system in India has grown remarkably, particularly in the post-independence period and the Universities have always been a paramount player in a global system increasingly driven by knowledge, information, and ideas (Gallarotti, 2010*)*.

Universities have started to perform multiple roles, like creating new knowledge, acquiring new capabilities, and producing an intelligent human resource pool, through challenging teaching, research, and extension activities to balance both the need and the demand. In most Indian universities today, there is a massive change in the way they function. They're continuously integrating different subjects and collaborating with different companies to bring the best for their students. Today, universities are changing and they are inspired to become our society's catalysts of change. They are willing to help students better confront real-world challenges with socially relevant curricula and research, dual guidance, mentor-mentee programs, visiting scholar programs, faculty development, etc. However, on the downside, the latest world ranking showcases only five Indian institutes securing a spot in the list of the top 300 world universities (Agarwal, 2009).

In 1991, the Indian government adopted a series of market-orientated policies that would fundamentally change the course of the country's economic strategy by embracing liberalization, privatization, and globalization (Agarwal, 2009). In the market for Higher Education, this manifested itself as a rolling back of the state, which constrained supply at government institutions and government-dependent private institutions, at the same time as demand for universities began to grow due to perceived increased rates of return and access to the global knowledge economy (Nambissan & Lall, 2011; World Bank, 2002; Levy, 2003). Higher education is now crucial to India's emergence as a major player in the global knowledge economy and, accordingly, it has experienced considerable growth evolving into the world's third-largest provider with 14 million students enrolled in 370 universities and more than 18,000 colleges (World Bank, 2008; Agarwal, 2009). This empowers the nation directly, through promoting innovation and skill development necessary for participation in the expanding knowledge economy, but also indirectly, through fostering social cohesion and mobility (Carpentier et al, 2011).

Table 1: Total Number of Universities in India

Universities	**Total No.**
State Universities	468
Deemed to be Universities	128
Central Universities	54
Private Universities	430
Total	**1072**
Universities under 12B	**Total No.**
State Universities	**267**
Deemed to be Universities	**50**
Central Universities	**54**
Private Universities	**25**
Total	**396**

Source: University Grants Commission, 2022

Higher Education in Ethiopia

Some scholars claim higher learning in Ethiopia is as old as the Obelisks of Axum and goes back to the monastic traditions of the Orthodox Church and thus dates as far back as 300 AD (Abebe, 1995; Kebede, 2010; Teferra, 2017; Teferra & Altbach, 2004; Saint, 2004; Wagaw, 1990). However, higher education in its contemporary form is commonly traced back to the opening of the Addis Ababa University College in 1950 (Wagaw, 1990; Asgedom & Hagos, 2016). Between the 1950s and the last decade of the 20th century, the country had only two public higher education institutions and no private higher education providers (Yirdaw, 2016). However, expansion initiatives that started towards the last decade of the 20th century increased the number of state-run universities to eight by 2002 (Bishaw & Melesse, 2017).

According to the Ethiopian Education Strategy Centre (2015), the country planned to increase the total number of public universities to 44 by 2020. In 2017 already, the country enrolled more than 800,000 students in 37 public and 124 accredited private higher education institutions in both undergraduate and graduate programs (MOE, 2017). The 2.4% attendance of the appropriate age cohort reported for the country by The World Bank in 2008 has also increased by approximately 120% since (Gulliksen & Audensen, 2013).
The Ethiopian government invests more than 40% of its education budget in higher education (UNESCO, 2015; Raynor & Ashcroft, 2012). Despite this expansion, it is worth noting that the country's higher education system is still considered elitist by global comparison (UNESCO, 2015). The initiative to reform higher education and research seems to be driven by tertiary education's potential contribution to economic development in the framework of the Agricultural Development Led Industrialization (ADLI) development strategy adopted, which is supposed to enable the country to join the league of middle-income countries by 2025 (FDRE, 2012; MOE, 2010; Akalu, 2014; O'Keeffe, 2016).

Despite the attempts of the government to strengthen and sustain a fruitful interconnection between universities and development, numerous backlogs are waiting to be accomplished. The major challenges include the presence of limited budget for research universities; mismatch between graduates' knowledge and skills and industries' demand; lack of sufficient skills and knowledge on the part of the staff on how to link research and development; absence of sound policy implementation strategies and plans; lack of ownership on the part of officials to implement policies, strategies, and plans (FDRE, 2022).

4. Research Methodology

Research Approach and Design

This study employed a qualitative comparative analysis methodology. This study compares Ethiopian and Indian universities in terms of their contributions to the development of the knowledge-based economy. Ten Indian professors with extensive experience in Indian higher education institutions and who are currently teaching in five Ethiopian universities and ten Ethiopian professors who are also currently teaching in four Ethiopian universities were both contacted for this study.
Universities are an important component of a knowledge-based economy; hence the following criteria were used to compare universities in India and Ethiopia: 1) human capital formation 2) Academic publications and Universities' direct involvement in commercializing research 3) Graduate-level startups 4) university-industry linkage and 5) Innovation. Therefore, the data collection and analysis processes were done in line with these criteria.

Sampling Techniques

Twenty people (ten Indian professors teaching at five Ethiopian universities who had formerly experience at Indian universities and ten Ethiopian professors) were taken from sample universities.

Table 2 Indian and Ethiopian professors have been taken from different Universities for the Study

SN	Name of Universities	Number of Indian professors taken as sample	Number of Ethiopian professors taken as sample
1	Bule Hora University	3	2
2	Dilla university	2	2
3	Hawassa university	2	2

4	Wachamo University	2	3
5	Arbaminch University	1	1

Data Collection Tools

In-depth interviews and focus group discussion was used to gather primary data. The interview subjects brought a general awareness of the five contrasting features listed above. Additionally, pertinent information on universities in India and Ethiopia was gathered from published works as secondary sources were so important.

An in–depth interview is an open-ended, discovery-oriented method that is well-suited for describing both program processes and outcomes from the perspective of the target audience or key stakeholders. An in-depth interview is a conversation with an individual conducted by trained staff. The goal of the interview is to deeply explore the respondent's point of view, feelings, and perspectives.

Table 3 Interview and Focus Group Discussion Schedule

SN	Name of Universities	Interview Schedule date with Indian Professors	Interview Schedule date with Ethiopian Professors
1	Bule Hora University	January 12-March 2, 2022	January 12-March 2, 2022
2	Dilla university	April 2-May20,2022	April 2-May20,2022
3	Hawassa university	April 2-May20,2022	April 2-May20,2022
4	Wachamo University	March 1-June 30, 2022	March 1-June 30, 2022
5	Arbaminch University	August 1-October 2, 2022	August 1-October 2, 2022

Data analysis

Transcribing the interview recordings, reading the transcriptions several times to get a sense of the entire interview, starting the coding process, reviewing all codes to determine which codes did not work or combined ideas from different codes, and breaking down the codes that contained too much data into secondary codes were all part of this research's data analysis procedures. Finally, analytical dimensions or themes emerged by revisiting the order and significance of all codes. Interview with ten Indian professors who participated in the study was coded from IP 01 to IP10. This means that IP (01) refers to the first Indian professor and IP (10) refers to Indian professor number 10. Interview with Ethiopian professors who participated in the study was coded from EP01 to EP10.

Trustworthiness

Lincoln and Guba (1985) argue that ensuring credibility is a vital issue in building reliability. The reliability and validity of this study were based on several standards that were held when this study was conducted. First, broad bases of experience and perspective to construct meaning by accommodating multiple realities of participants were created. Second, two major data collection tools, namely, in-depth interviews and focus group discussions were employed. The third step was checking and rechecking the data during coding and categorizing.

Moreover, the researcher spent enough time with participants before conducting any interviews and focus group discussions.

Ethical considerations

All interviewees were given a copy of the research's information and asked to either sign the consent form or

give their verbal consent. All interviewees were made aware that they were under no obligation to participate and might end the interview at any point if they so desired. The researcher assumed all responsibility for the subjects, including matters like maintaining anonymity and abstaining from actions that would negatively impact them. The researcher maintained participant confidentiality by keeping their private information and identities a secret. Their names and addresses were never provided by the researcher.

5. Data Presentation and Discussion

Human Capital Formation

The role Colleges and universities play in regional economies has increased as the global economy has become more knowledge-driven (Benneworth & Nieth, 2020; Harrison & Turok, 2017). However, optimizing the development of human capital across various labor force sectors is an as important task for universities as research and development (Goldin & Katz, 1998, 2008). Therefore, increasing access to higher education is a desirable strategy for state governments because it increases salaries for individuals and corresponds to even larger gains at the population level (Moretti, 2004b).

Regarding this issue, Indian and Ethiopian professors were interviewed and their responses were indicated as follows:

IP (05) discusses experiences along these lines,

> *With many million individuals in the college-going age group, India will be one of the youngest countries in the world. One in every four graduates worldwide will be a result of the Indian educational system. With this respect, Indian universities are doing their best. Human capital formation is their main mission.*

IP (04) went on to say the following:

> *India's human capital development is more robust, and it places a larger emphasis on raising service quality while supporting ongoing efforts to guarantee access to essential services. There are more than 1000 universities and all of them are producing manpower for the market economy both for India and the world market too.*

IP (07) further said the following:

> *Without human growth, development is meaningless. The growth and productivity of the organization depend on the development of its human capital. India made a huge investment in bolstering the educational system to increase and broaden the productive workforce in the nation through its universities. When I compare Indian universities with Ethiopia in this regard, India is moving many steps ahead.*

IP (01) provided the following assessment of the state of Indian Universities in the following ways:

> *India has the third-largest higher education system in the world. For all of us, knowledge is the third eye. In the twenty-first century, it is the most crucial element for economic growth and prosperity. Indian universities are therefore engaged in the development of human capital, as a result, Indian professionals are competitive not just in India but also throughout the world.*

EP (03) said the following:

> *Universities in Ethiopia are turning forth graduates who are ill-prepared for the workforce, and facilities and laboratories lack the tools necessary to develop top professionals.*

EP (06), in addition, added the following:

> *Even though higher education in Ethiopia is underdeveloped and has significant issues, universities across the country are constant engines of human capital formation.*

EP (05) further said the following:

> *Our educational programs do not address graduate employability and youth self-employment. Our limited research capacity does not permit the creation of new knowledge needed to effectively contribute to the achievement of development. These are the main challenges facing our universities. But, with all the challenges, our universities are doing their part to fill the manpower gap.*

EP (02) stated the following:

> *Higher education enrollment in Ethiopia has more than doubled since the turn of the millennium, and the continent has seen rapid growth in its knowledge of IT and innovation but the manpower lacks quality as our universities are at their infant stages.*

Additionally, EP (07) adds the following:

> *I think the World Bank is making investments in the human development process in Ethiopia, but our universities are not successful at enhancing human capital and yielding high rates of return.*

Academic publication and commercialization

Governments and universities all over the world are taking action to identify marketable research products, strengthen ties with industry, and create institutional frameworks required to sustain and increase research output and quicken the technology transfer process. However, this progress is not without skepticism from some institutions and individuals. Higher education has attracted more global policy attention in recent decades (Brennan and Naidoo, 2007). A knowledge society with a focus on knowledge creation and ongoing innovation has emerged as a result of the changes that have occurred in the economic and technological environment of higher education.

Here are the interview results that demonstrate the realities of universities in Ethiopia and India.

IP (02) indicated that

> *India has succeeded by making the best use of its elite education institutions and exploiting international information technology-related opportunities, in part through the deft use of knowledge assets.*

IP (08) further said the following:

> *The two most significant productive forces in the current state of the global knowledge economy are knowledge production and technical innovation. When I contrast Ethiopian universities with Indian universities, I can see how strongly Indians are pursuing this issue. Numerous publications have been made, and innovations are also widely known.*

Indicating the condition of Ethiopian Universities, EP (01) said the following:

> *The majority of our universities are still in their infancy. Government involvement is very prevalent, and universities are not autonomous. and behave following the state's political interests. In Ethiopia, there are problems with knowledge creation, research, and publications. Additionally, the universities' financing for the research activity is insufficient.*

> *EP (05) said that Ethiopian governments did little to promote the development role of universities. In the first place, resources are so scarce and secondly, these limited resources are used to materialize political agendas.*

EP (07) further said the following:

> *No nation can truly engage in the global knowledge economy without at least some level of a national research system, which is made up of universities, the commercial sector, public research facilities, and outside financing. Therefore, Ethiopia does not have a robust national research system, policies, or strategies. The majority of our universities are teaching institutions rather than research ones. Thus, we do not have a good story to talk about this issue.*

EP (06) said the following:

> *In Ethiopia, the low knowledge production could be blamed on low capacity and resources, the problematic incentive structures of these universities, and the like.*

Start-ups

Start-ups increasingly find the prospect of university-industry collaborations to be a powerful driver of innovation and entrepreneurship activity. This suggests universities can play a bigger role in helping graduates with good business ideas and the right motivation turn their aspirations into reality. Not only would this enable more graduates to pursue their ideal vocation, but it would also bolster universities' reputations and contribute to regional economic development, productivity growth, and innovation.

IP (01) said the following during the interview:

> *Regardless of the subject they are studying, students seem to go to college to change the world through startups, social entrepreneurship, and other self-made businesses. In this case, India is an excellent model to follow. The same zeal and vigor are also shown by young faculty members who now plan to develop new technologies or work with startups as part of their academic careers.*

The Ethiopian Professor (EP 04) said the opposite during the interview:

> *One of the most effective ways that colleges and universities may operate as economic accelerators at a time when societal concerns are demanding discoveries at the intersections of various fields is by encouraging an entrepreneurial culture. However, in our situation, there isn't a good climate for graduates to launch their firms, and their education at colleges and universities promotes dependency rather than independence.*

> *While this is the case in Ethiopia,* ***EP (03)*** *stated that universities can play a significant role in ensuring that these economic gains are spread across the economy and not just among those who pursue advanced degrees in advanced technologies.*

Indian professor (EP 01), during the interview, said the following:

> *University incubators and programs can be quite advantageous for a startup. Universities that support entrepreneurs abound in India. Some firms receive funding from the university's innovation and industry connection companies.*

Innovation

Historically, higher education institutions have been praised for their contribution to creating new knowledge, advancing the technology frontier, fostering economic development, and being agents of change in the local and regional communities. Universities' contribution to innovation and economic development has been widely documented.

Indian professor (EP 10), during the interview, said the following:

> *Universities are embracing entrepreneurship as a component of the academic experience as the pace of discovery quickens and the level of international competitiveness rises, fostering environments that stimulate and support creative thinking.*

IP (01) said the following during the interview:

> *Universities must also forge new alliances with top corporations, foundations, and other organizations that prioritize research in today's competitive market. I think India is good in this regard.*

The Ethiopian Professor (EP 04) said the opposite during the interview:

> *The information economy is now centered on universities, and while they innovate, Ethiopian universities have not done much of it.*

EP (07) further added the following:

Research production is influenced by the age of the institution, the number of international university collaborations, research funding, the number of Ph.D. programs, and the number of completed research projects. The quantity of MSc/MA staff members and the number of programs also have an impact on innovation. But, Ethiopian universities are not lucky enough for this.

University-Industry Linkage

Prompted by a shifting understanding of the sources of sustainable development, nowadays universities are being asked not only to help industries thrive or close the loop between research and its application but also to birth new firms and industries. Synergies between higher education institutions and industries can play a critical role in securing and leveraging additional resources for higher education, promoting innovation and technology transfer, and ensuring that graduates have the skills and knowledge required to effectively contribute to the workforce.

Indian professor (EP 09), during the interview, said the following:

> *Over time, the research and development activities with economic activity in general and with industry, in particular, have received increased attention from Indian science and technology policies. As a result, universities and industries are supporting each other.*

IP (01) said the following during the interview:

> *The Science & Technology Policy of 2003 outlined a plan for turning India becomes a center for research. Special focus is placed on the connections between business, academia, and scientific research institutions. So, far India achieved a remarkable result.*

EP (06) said the following:

> *To direct science and technology efforts toward concrete industrial goals, the industry will be encouraged to financially adopt or support educational and research institutions, fund courses that interest them, and create professor chairs. But, the reality does not reflect that in Ethiopian universities.*

EP (06) said the following:

> *The name university-industry linkage is common on the paper in our universities but practically they did nothing.*

IP (06) said the following:

> *University-industry linkage is a deep-rooted practice in India. Universities produce competent graduates for industries and industries fund the programs of the universities. They do have a mutual relationship.*

6. Conclusion

Innovative knowledge use is now a major force behind societal advancement and economic growth. Through significant changes in the structure and content of work, current knowledge and technology are also impacting the pace of competition and changing the nature of labor market needs. In this setting, higher education systems are vital to the development of democratic, socially cohesive societies as well as knowledge-driven economic growth strategies.

Higher education is essential for effective economic development. The Ethiopian government has greatly increased access. Public higher education institutions have multiplied dramatically. However, Ethiopia has lower performance even though it has recently made significant gains in comparison to nations like India. For instance, it is starting from a significantly lower base than most other countries in terms of research output about the population. Research performed by Ethiopian universities still has relatively low production and influence. Universities in Ethiopia severely lack the resources necessary to do research. Additionally, universities do not collaborate with industry enough while developing their science and technology curricula. The development of human capital is still in its infancy.

7. Recommendations

To adapt the higher education system in Ethiopia to the demands of the nation, other models of success in India can also be employed. By redesigning and implementing programs in conjunction with businesses, lessons from Indian institutions might encourage improvements in curricular and pedagogical techniques to increase the relevance of programs. It is crucial to emphasize research, human capital development, university industrial links, innovation, and graduate start-up. Public and private colleges and universities in Ethiopia must be free from political ties like Indian Universities.

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