Globalization and Internationalization in Engineering Education in Africa

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Abstract: Recently, the higher education domain has been on a quest for rapid social, technical, economic and political overhaul as a result of the post-industrial environment. The quest has led to major changes and evolution in higher education institutes of learning. These factors of evolution in higher education are globalization and internationalization. Globalization and internationalization are closely related but different. Globalization can be likened to the context of economic and academic trends that are tailored to meet 21st century realities while internationalization is the process of planning and implementing products and services so that they can be adaptable to specific context such as language and culture. This research seeks to understand the approaches towards globalization and internationalization of engineering education in Africa. findings from the study revealed that the practice of engineering education is not only domiciled to a particular country, region or continent. As a result of human development and civilization, it has become global and internationalized and there are various approaches to globalization and internationalization which were expatiated on in the study. This study therefore recommends that there is a need to focus more on provision of adequate facilities such as better internet service and other information and communication technologies to encourage the conduct and practice of engineering education and more impetus should be given to internationalization of engineering education in Africa as it has the capacity to help develop the region.

Keywords: Globalization, internationalization, engineering, engineering education

I. INTRODUCTION

According to UNESCO (2010)engineering was defined as the field, discipline, practice or profession that has relation with development, acquisition and application of technical, scientific and mathematical knowledge which is applicable in understanding, design, development, invention, innovation of materials, machines, structures systems, processes for different purposes while engineering education is the process of teaching knowledge and principles that are related to the discipline of engineering. It is the process whereby engineers are trained. As a result of the process, conduct and practice of engineering, it has built the world we inhabit spanning different areas of human lives. Engineering is vital for the overall process of development seen now and in time past. From the construction of roads, bridges, airports, and other infrastructures, it has helped the survival and well being of humans. Recently, the higher education domain has been on a quest for rapid social, technical, economic and political overhaul as a result of the post-industrial environment (Sabagian Z, 2010). According to Gumport PJ, Sporn (1999), the quest has led to major changes and evolution in higher education institutes of learning.

These factors of evolution in higher education are globalization and internationalization (Ghasempoor A, Liaghatdar M, Jafari E. 2011.).Globalization and internationalization are closely related but different. Globalization can be likened to the context of economic and academic trends that are tailored to meet 21st century realities while internationalization is the process of planning and implementing products and services so that they can be adaptable to specific context such as language and culture (M.Rouse, 2011). As humans developed and explored the environment, they gained mastery of how to effectively make the most of the resources and this resulted in the creation of simple devices. These has evolved with time and there is the massive breakout of various technologies which has influenced life and educational activity. Each of this evolution are chronicled in time as industrial revolution.

Technological advancements of the 21st century came which culminated in changes in engineering education programs with its requirements. With the advent of information and communication technologies globally, it resulted in full distance education program across various countries of the world. With these various information and communication technologies, E-learning has facilitated the delivery of educational resources to learners and encouraged interactive learning sessions across various geographical divides, economies, and demographics. This research seeks to understand the approaches towards globalization and internationalization of engineering education in Africa.

II. METHODOLOGY

To tackle the major crux of this research, a literature review was carried out to identify and synthesize research on globalization and internationalization in engineering education in Africa. Globalization and internationalization in engineering education include the curriculum, language, teacher, policies etc.

Deconstructing globalization and internationalization as concepts

Marcus Aurelius revealed that the antiquity of globalization is as old as human civilization. Globalization is a word that has become puzzling as a result of ideas and opinions about its definition. With this is the many dimensions and attitude in succinctly explaining the concept.So,also, is internationalization, as it has become a topical issue in various academic discourses. Both concepts are often used interchangeably. According to Enders (2002), the concepts are different but they are used interchangeably. In their usage, it identifies synergy and cross-border activities between states.

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Globalization is a dynamic process with no absolute end in view. In as much as humans will not stop developing, the impetus for globalization cannot stop. There are many definitions of globalization according to various authors and generally, globalization is seen in relation with limiting and compressing time and space, overcoming geography and distance, encouraging the movement of people, goods, capital and information (Appadurai, 1990). As humans developed, the need to ensure movement became more important. It is noteworthy to bear in mind that movement is a survival strategy and people at all time must move. Congruent with this view, is the need for goods, services and information to move across various geographical divides which can only be made possible by globalization. Human survival is predicated on availability of various goods and services, and information which must be disseminated to them as at when due. Hence, this necessitates the drive for globalization in all clime.

Globalization did not just come to be, taking a cue from human history, moving from different facet of development such as the Paleolithic age to the Neolithic age, man has evolved and with his constant interaction with the environment, he has been able to explore and interact with all elements surrounding him. This resulted in creation of simple tools that facilitated easy exploration of these materials for his very survival. The simple tools with the knowledge of engineering education has developed into a plethora of technologies we see today which has the propensity to encourage globalization. With evidences from various epoch of development chronicled as the industrial revolutions, man has moved at a pace worthy of commendation with massive breakout of technologies which has contributed to globalization. These technologies have the capacity to limit the gap between time and space.

Internationalization is seen as a response to globalization. According to Altbach, Reisberg and Rumbley (2010), internationalization is the plethora of plans, policies and programs that the government and universities implement as a response to globalization. In the higher education landscape, globalization is causing an overhaul in highereducation and research and it has been tainted as an academic revolution (Altbach et al, 2010). Higher education is a field in which there is a fusion between globalization, competitiveness and the knowledge economy (Jessop & Sum, 2013). This typifies the constituents of the higher education landscape. As globalization ensued, it strengthened the impetus for competition and hence the development of the frontiers of knowledge. The dynamics of internationalization in higher education knowledge outcome, knowledge alliances and organizational disruption are occurring at a fast pace compared to previous years. This has made universities globally to put up various measures at assessing their place within the knowledge community and define their roles and contributions. Internationalization therefore has the impetus to carve a niche for higher institutions of learning and determine where they will be placed in the global map of higher education (Teichler, 2004). With the drive for globalization, internationalization in higher education has come to the fore. With various issues in the analysis of globalization and internationalization, they represent dynamic concepts that are closely related and it is apt to say that globalization is the precursor while internationalization is the response.

Internationalization is the process whereby international or intercultural elements are integrated into teaching, research and service function of internationalization (Knight J, 1994:Knight J, Hans, de Wit, 1997). Globally, educational institution places much value on internationalization and much respect is accorded to Europe with North America, Middle East, Latin America and the Caribbean following. It is noteworthy to bear in mind that the English-speaking nations render most international services in higher education while countries from Asia, Latin America and other developing nations are recipients as a result of their inability to meet their educational needs (Altbach, PG, Knight J, 2007:Kreber, C, 2009). It is also a process of integrating an international outlook into a college or university system (Said et al, 2015)

Internationalization in higher education has been in existence since and movement of teachers and students across various geographical divides has gained prominence over a century ago (Wit, 2002) before the renaissance. People at that time engage in educational tours over Europe and other regions of the world. This has brought about tremendous changes and development in the higher education domain globally (Egron-Polak, 2012: Sutton & Obst 2011). It is important to note that knowledge is universal and for people to overcome the challenges that burdens them, there has been the quest to learn more and widen them educational and knowledge frontiers. The rationale for internationalization in the higher education domain are numerous and people at all time seek to benefit from cross-border education to widen their approach to issues, leverage on better educational facilities, explore other environment and culture, tap into the benefits of diversity of opinions. This gained traction in the 20th century and the pace, scale and scope of its spread had massive impact on the higher education landscape and its activities globally. With knowledge being a universal good, encouraging its spread across various geographical divide is crucial for human development. Hence, the opinion by Rumbley (2015) that internationalization is one of the major happenings in the higher educational landscape. By internationalization, educational gaps are being limited, production has been influenced and economies are also benefitting from it. Though, there are numerous calls for decolonization of higher education, internationalization of education is still critical to the knowledge economy globally. Globalization and internationalization have come to stay though there exists tension between them and the nation state. the institution of higher education is subject to the state and the activities of some of the universities are within the auspices of national higher educational systems. Globalization and international are pivotal for change but this will not come as a linear process with attendant outcomes. The hegemonic tendencies within the nation state and the consequent interplay on the higher education domain shapes attempts at globalization and internationalization.

Hence the need for a platform that seeks a balance between the nation state and the higher education landscape globally. Knowledge is key in the modern economy and the growth of the modern economy is predicated on the explosive breakout of the knowledge sector (Drucker, 1969). Universities are important and they play functional roles in educational systems and they are the major support to human capital development, research and innovati0n. With globalization and internationalization in higher education, universities have been opened up for collaborations globally, international exposure, idea synergy and research partnerships which with time has become increasingly mobile defying various geographical borders in unprecedented manner. Thus, geo-spatial configuration and integration are important to the knowledge body and the elements in it must fuse for creativity and innovation which will consequently impact the nation as a nation's competitiveness is predicated on its propensity for innovation. As a process of globalization, internationalization encourages a gravitation towards international standards. There are various standards that are considered acceptable internationally though some might not be documented, encouraging internationalization ensures that elements of such standards are replicated across various climes.

Impetus for globalization and internationalization of engineering education in Africa

It is important to note that globalization and internationalization is crucial as humans develop and in educational parlance, knowledge is universal. The impetus for globalization and internationalization in engineering education cannot be trivialized. According to the United States Military Academy (2010), the first engineering program which is civil engineering was established in the United States military academy founded in 1802 and it had the basic purpose of reducing the nations reliance on engineers from outside and artillerists of war. This was a defining moment for the spread of engineers globally which is an element of globalization and internationalization in engineering education. This culminated in various development such as transcontinental railroad, electric power, telegraph and telephone, steam and internal combustion engines across various countries of the world.

It was revealed in the Global industry Analysts reports (Education services, 2013) in 2013 that the global market for education services is projected to soar to US$357billion by 2018 and it was attributed to the growing demand for education and training services in developing countries. Africa as a developing region is characterized by imbalance between the educational needs and educational potential there and hence the need for globalization and internationalization of education in Africa. Also, there is mismatch in education quality as graduates of universities cannot effectively cope when employed. There is also increasing competitiveness in the market which requires the best set of persons to handle work processes and the need for cross-cultural awareness and international adaptability of graduates in Africa. Also, the workplace is dynamic and there is a need to meetup with the demands of employers. With various crisis occurring in the physical, social and economic sphere, people need to upgrade their skillset to tackle the prevailing challenges. The need to redefine the curricular, modify the old and create new programs to international standards also encourages globalization and internationalization. The frontiers of knowledge in engineering education is dynamic and it has assumed a spread to various countries and regions of the world. With engineering as old as human civilization, no nation can survive without engineering education as it is pivotal for economic growth and development. This cross-border spread of knowledge has gained more traction with the advent of the post-industrial era which was replete with the massive breakout of information and communication technologies. Much more than this is the era we are now which is the fourth industrial revolution which has the impetus to fully influence globalization and internationalization in engineering education. With various technologies that blurs the divide between geographies and spaces, globalization and internationalization in engineering education is in top gear as various countries of the world are on a course to leverage on the various advantages that are emerging with this era. With various changes occurring recently such as wide, massive demographic changes, environmental changes, changes in governance and economies, instability and chaos, pandemics and other breakout, there is moreimpetus for engineering education now than in previous time because by the apparatus of engineering education, some of these challenges can be overcome. With differences in nations of the world on various indices such as development, it confers advantage on some more than others. Take for instance a divide of nations into the Global North and the Global South. One characterized by high literacy level which has culminated in various advantages and opportunities for the countries such as good infrastructures, low poverty, good systems and institution and better welfare for its people while the other is characterized by low literacy level, widespread poverty, poor infrastructures, weak economies and systems, dependence on the natural resource base for sustenance and general backwardness. With this in mind, there is a need to encourage cross-fertilization of ideas to positively influence the knowledge frontiers in both divides. Hence, the impetus for globalization and internationalization in engineering education globally. With countries from the Global South not able to meet up on some indices of development such as standard education, it is important that they rely on knowledge from other countries so as to enhance their knowledge bank, upgrade their international perspectives on issues, sharpen the skills of their students, encourage cross-cultural understanding which will confer more dividends on the countries thereafter. The impetus for globalization and internationalization in engineering education is vital to encourage integration of research, encourage the use of English language for scientific communication, increase and contribute to international labour for researchers, scholars and scientists, encourage communication over wide geographical spaces and facilitates the spread of knowledge across different platforms.

Students move from the south to the north while they contribute to developing their nations. This culminates in growing international market for competent academic and scientific personnel, commercialization of international higher education, internationalization of the curricular, and more profit for the higher education sector. There is inequality in the globalization-internationalization dynamic as the developed countries controls most of the process especially the English-speaking nations and the European union. This has conferred more interest on these countries for knowledge monopoly at the detriment of developing nations. With internationalization, the migration of international students, their academic programs in foreign countries, are mostly controlled by these countries and most often they reap the financial benefits and control of these programs. For instance, Africa is characterized by fewer international and cross border initiatives in engineering education except for South Africa, South Africa has demonstrated good international and cross-border initiatives and it's one of the best countries for engineering education in Africa. Globalization affects all facet of the society and the higher education domain is not spared. It has encouraged mobility of ideas and people in the educational sector (Whitaker, 2004). Global interdependence has come to stay on the economic, social, political and academic sphere and universities have also responded to it. One way the university responded to it is internationalization of their programs. As a result of the impetus for globalization and internationalization, many universities have leverage on this global trend and may higher educational institution have/are in a quest to forge synergies and collaboration with regional, international and intercontinental universities (Polan-Egron, 2012)

Approaches towards globalization and internationalization in engineering education in Africa

The practice of engineering education is not only domiciled to a particular country, region or continent. As a result of human development and civilization, it has become global and internationalized. Africa has reflected globalization and internationalization in engineering education though there are different paces between nations of the world. University education in Africa was started by the British and they brought with it elements of western influence into the curriculum. This is a dimension by which globalization and internationalization came to be in Africa. Also, South Africa is the epicenter of engineering education in Africa and this is because of well-developed infrastructure in the region. South Africa is a country with improved infrastructures which has positively influenced the practice of engineering education in the nation. As a result of the aftermath of the apartheid regime in the country, there was a change and overhaul in the conduct of educational activity in the region and the nation opened up to other African countries with good engineering universities. Going forward from this, some universities in south Africa such as the university of cape town and the university of Witwatersrand developed majorly in interdisciplinary programs including engineering programs. The launch of the internet also contributed to globalization and internationalization of engineering education in Africa. The internet affected the whole educational process in Africa and brought with it lots of changes. One of the avenues by which the internet has affected the educational process is its influence on the spread of information, delivery of the content of the curriculum etc. In engineering education, the internet has been pivotal in ensuring that students get access to a wide array of information needed to become qualified graduates in engineering education. With the internet, the means for spread of information between students and their teachers have improved. With the internet, the delivery of lessons has also improved as multimedia devices has been infused into the teaching process. Students also have personalized access to learning materials and information critical to the pursuit of their educational dreams and they explore this at their own pace and comfort. Most universities in Africa have websites where students can access information they need, get updated with features of the institution, get access to teaching and learning materials, research and publications. With the traditional classroom, teaching scenario majorly practiced in Africa, there is a shift nowadays towards virtual classroom experience brought about as a result of internet. The internet thus has aided the gathering and spread of information to aid the whole educational process. The traditional classroom teaching has its own unique features but, such features can also be mirrored by other virtual methods of delivery of information and knowledge. Some of these include massive open online courses (MOOCS). Educational activity in time past generally has been constrained by the need to have students sit in a classroom and the teacher delivering lectures to them. With the massive breakout of technology, it has contributed to globalization and internationalization in engineering education. With technologies, those constraints are being relaxed in order to cause an overhaul and change to the whole educational dynamic. Massive open online courses (MOOCS) is a form of education where stand-alone instruction online is being provided (B Xing, 2015). In this current clime, MOOC is gaining traction with its numerous advantages. It helps overcome the burden of gathering students together in a physical classroom setting, it eliminates the need for buildings and numerous instructors. The MOOCs are important in bridging the gaps in education in the developing countries especially in sub-Saharan Africa. The MOOC is a digital learning tool within various educational technologies that has the capacity to bridge the digital divide. The online open participatory learning system is not new as they have gained popularity since the first decade of the 21st century and they have culminated to the open educational resources we have today (Brown 2008, Yuan & Powell, 2013). The MOOC is one of the manifestations of open educational resources. With English becoming the language of science and technology and for engineering to have substantial international spread and depth, its often communicated in English. With most native English-speaking countries as a result of colonization, it has massive influence on the delivery of science and technology. It has been reported that engineering education in countries in Africa using English language for their programs equals that of the United Kingdom.

With most engineering educators in Africa having their education and training in Asia, Europe and America, they have the requisite international exposure that can culminate in internationalization of engineering education in Africa. With the influence of external examiners and assessors, they bring in their wealth of international experience and exposure to influence engineering education practice in Africa. As a result of inadequacy in capacity which might include machines, infrastructure, personnel etc., there has been the need to rely on other institutions of learning for a balance in the educational process. Some institutions in Africa have internationally linked and international exchanged programs. This program exemplifies elements of globalization and internationalization in it. In international partnerships, foreign institution partners with local ones to ensure that the educational process is strengthened and also for instance, a student spends a stated number of years in Africa, then proceeds within stipulated time to another country where all that is needed for the program is available. There is also traditional study abroad program-internet, face to face arrangement, branch campuses or franchises and the It's an arrangement between a local and foreign education provider to offer an educational programme for a qualification that is awarded by the two educational bodies.These are vital in the globalization internationalization mix in engineering education in Africa. International partnership in engineering education is crucial to enhancing learning and research capacity in the discipline. As a result of international partnership, the potential for interdisciplinary collaboration and furthering the course of the discipline. Partnerships between universities from developed world and local universities can help in lending a helping hand to African universities and to advance excellence in the developing country (Harle J, 2013). Though there are series of concerns on the rules of exchange, the institution from the developed country often set the agenda for the exchange with little or no input from the university in the developing country (Harle J, 2013). This type of bottom top approach to educational processes might not augur well for thorough exchange and fairness. International partnership between developed country's institution and institutions from Africa portends great advantage for encouraging and propagating STEM which engineering is a part of. This north-south affiliation provide opportunity for African students outside their curriculum to explore engineering using a global world view. International partnership must be beneficial to both foreign and local institution and areas that needs strengthening within each institution must be considered based on locally identified needs. The distance education is a provision and access to learning experiences when the knowledge source and the learners are constrained by time and space and it ensures that the same educational experience in the classroom is delivered (K.F Vajargah et al, 2013). This has improved with the advent of information and communication technologies in globalization and internationalization era. Other approaches towards globalization and internationalization include remote learning in engineering education, double or joint degree.

III. FINDINGS AND DISCUSSION

Findings from the study revealed that engineering education is the process of training engineers. It has been noted that the conduct and practice of the profession has assumed an overhaul as a result of two forces which are globalization and internationalization. As humans became better and civilization progressed, they gained more mastery of the environment and various engineering processes facilitated development globally. The discoveries made in the 21st century in information and communication technologies has been critical as a tool for encouraging globalization and internationalization in engineering education in Africa. initially, it was revealed that engineering education evolved in America but as nations developed, it saw to the emergence of transcontinental railroad, electric power, telegraph and telephone, steam and internal combustion engines. Findings from this study revealed that globalization and internationalization are closely linked though with different meanings. Globalization is a dynamic process with no absolute end in view. In as much as humans will not stop developing, the impetus for globalization cannot stop while internationalization is seen as a response to globalization. The two work together. Internationalization is the process whereby international or intercultural elements are integrated into teaching, research and service function of internationalization. The impetus for globalization and internationalization was also considered in this study. As a result of various imbalances in educational potential and educational need in Africa, there is a need for globalization and internationalization. The frontiers of knowledge in engineering education is dynamic and it has assumed a spread to various countries and regions of the world as a result of the impetus for globalization and internationalization. With differences in nations of the world on various indices such as development, it confers advantage on some more than others and there is a need for such to spread to those disadvantaged nations which can only be made possible as a result of globalization and internationalization. Globalization and internationalization in engineering education is vital to encourage integration of research, encourage the use of English language for scientific communication, increase and contribute to international labour for researchers, scholars and scientists, encourage communication over wide geographical spaces and facilitates the spread of knowledge across different platforms. Some approaches towards globalization and internationalization of engineering education in Africa was also considered and it was found out that the launch of the internet also contributed to globalization and internationalization of engineering education in Africa. This came with immense opportunities for globalization and internationalization in engineering education as some notable technologies aided it. There are now MOOCS, international partnerships, student exchange, study abroad programs, double or joint degree in engineering education.

IV. CONCLUSION AND RECOMMENDATION

This study concludes that globalization and internationalization has aided the conduct and practice of engineering education in Africa and various approaches that encouraged globalization and internationalization were considered in this study. This study therefore recommends that there is a need to focus more on provision of adequate facilities such as better internet service and other information and communication technologies to encourage the conduct and practice of engineering education and more impetus should be given to internationalization of engineering education in Africa as it has the capacity to help develop the region.

REFERENCES

1. Altbach, PG., Knight, J. (2007),"The Internationalization of higher education:Motivations and realities", Boston College-Center for International Higher Education. http://www.bc.edu/bc_org/avp/soe/cihe/pga/pdf/Altbach-Knight_2007.pdf.
2. Altbach, Philip G; Reisberg, Liz &Rumbley, Laura E. (2010) *Trends in Global Higher Education: Tracking an Academic Revolution*. Paris: UNESCO.
3. Appadurai, Arjun.(1990) "Disjuncture and Difference in the Global Cultural Economy" *Theory Culture & Society*. 7 pp. 295–310.
4. B. Xing. (2015). "Massive online open course assisted mechatronics learning a hybrid approach," in Furthering Higher Education Possibilities through Massive Open Online Courses, Chapter 12, pp. 245-268, A. Mesquita and P. Peres, Eds., 701 E. Chocolate Avenue, Hershey PA, USA 17033: IGI Global, ISBN 978-1-4666-8279-5
5. Brown, J. S., & Adler, R. P. (2008). Minds on Fire: Open education, the long tail, and learning 2.0. *Educause review*, *43*(1), pg 16-32. Retrieved on March 27, 2014 from
6. de Wit, Hans. (2002) *Internationalization of Higher Education in the United States of America and Europe: A Historical, Comparative, and Conceptual Analysis*. London: Greenwood Press.
7. Drucker, Peter F. (1969) *The Age of Discontinuity: Guidelines to Our Changing Society*. New York: Harper & Row.
8. Education Services. (2013) Market Research Report. GIA.
9. Egron-Polak, Eva. (2012) "Internationalization of Higher Education: A Few Global Trends and Regional Perspectives" *The Globalization of Higher Education*. in C.T. Ennew& D. Greenaway (eds.) London: Palgrave Macmillan.
10. Enders, Jürgen. (2002) "Higher Education, Internationalization, and the Nation-State" *German Policy Studies/ Politikfeldanalyse*. Vol. 2, Issue 3, pp. 1–32
11. Ghasempoor A, Liaghatdar M, Jafari E. (2011). An analysis on localization and internationalization of universities curriculum in the globalization era. Iran J cult Res. 4:1-24
12. Gumport PJ, Sporn. (1999). International adaption: Demands for management reform and university administration. In: Smart JC, Tierney WG, editors. Higher education: Handbook of theory and research. 14ᵗʰ ed. New York: Agathon Press.
13. Harle J. (2013). Strengthening research in African universities: reflections on policy, partnerships and politics. *Policy Prac Dev Educ Rev*; 16: 80_100.
14. https://net.educause.edu/ir/library/pdf/erm0811.pdf
15. Jessop, Bob & Sum, Ngai-Ling. (2013) "Competitiveness, the Knowledge-based Economy and Higher Education" Journal of the Knowledge Economy. 4 (1), pp. 24–44.
16. K. F. Vajargah and M. Khoshnoodifar, "Toward a distance education based strategy for internationalization of the curriculum in higher education of Iran," *Turkish Online Journal of Educational Technology- TOJET*, vol. 12, pp. 147-160, 2013
17. Knight, J., Hans, de Wit., "Internationalization of higher education in Asia Pacific countries", Amsterdam: European Association for Internationalization. Education Publications, 1997.
18. Knight, J.(1994),"Internationalization: Elements and checkpoints", *Research Monograph*, no.7, Ottawa, Canada. Canadian Bureau for International Education.
19. Kreber, C. (2009),"Different Perspectives on Internationalization in Higher Education", *New Directions for Teaching andLearning*. 118, pp. 1-14.
20. M. Rouse. (2011). What is the internationalization? [Online]. Available: http://whatis.techtarget.com/definition/internationalization-I18N
21. Polan-Egron, E.,"Higher education internationalization: Seeking a new balance of values",2012. Retrieved from https://www.nafsa.org/Explore_International_Education/Trends//TI/Higher_Educaton_internationalization_Seeking_a_New_Balance_of_Values/
22. Retrieved on March 10, 2014 from http://publications.cetis.ac.uk/2013/667
23. Rumbley, Laura E. (2015) "'Intelligent Internationalization': A 21st Century Imperative' *International Higher Education*. No. 80, Spring, pp. 16–17.
24. Sabagian Z, 2010. Academic culture. A research framework in approaches and new visions in higher education. Tehran: institute of social and cultural studies.
25. Said, H., Ahmad, I., Mustaffa, M. S., & Abd Ghani, F. (2015). Role of Campus Leadership in Managing Change and Challenges of Internationalization of Higher Education. *Mediterranean Journal of Social Sciences*, *6*(4), 82–88. https://doi.org/10.5901/mjss.2015.v6n4s1p82
26. Teichler, Ulrich. (2004) "The Changing Debate on Internationalization of Higher Education" *Higher Education*. Vol. 48, pp. 5–26
27. UNESCO Report (2010) Engineering: Issues Challenges and Opportunities for Development (accessed on 11/25/2016 8:22 AM).
28. Whitaker, AM.2004., "The Internationalization of higher education: A US perspective". Retrieved from http://scholar.lib.vt.edu/theses/available/etd-06202004 192329/unrestricted/WhitakerMP.pdf.
29. Yuan, L. & Powell, S. (2013). MOOCs and Open Education: Implications for Higher Education, A White Paper. *Center for Education Technology and Interoperability Standards*.