The Role of Universities in Oil and Gas Education in Nigeria

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Abstract

The origin of this paper goes back to the first stakeholder analysis of the Nigerian oil and gas industry local content development policy (LCD) and its impact on the indigenization of employment and job creation. This paper undertakes to understand the extent to which oil and gas education has an impact on indigenous employment based on the criteria of curriculum and industry demand; suitability and employability of graduates. Drawing from policy documents and semi-structured interviews, one of the stakeholder groups identified and categorised as key 'player' is the Higher Education Institutions, the focus for this paper. A social network analysis reveals that: a marginal role is played by higher education institutions within the network. Our findings provide valuable evidence of the absence of a relationship between universities and other stakeholder groups, notably a disjoint between academia and industry in the Nigerian oil and gas industry; and the resulting effects of the linkages.

Keywords: university, oil and gas education; interaction; Nigeria

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Introduction

We argued in our paper, De Vita et al (2015) that the stakeholder categorisation analysis reveals the extent to which industry experts and academics that have already devoted attention to Nigerian LCD, have systematically neglected the importance of the key role by actors from the government and operators. On this account, it is worth noting that the various theoretical frameworks that have emerged to date in relevant literature to evaluate the efficacy of Nigerian LCD policy (see Bakare, 2011; Heum et al., 2003; Ihua, 2010; etc.), though of considerable merit in many respects, appear to have focused almost exclusive attention to - at most - two stakeholders, namely the government and/or the operators. For example, Ihua (2010) restricted his framework to operators alone. Heum et al. (2003) extended the model but only by considering the additional role of the government. Bakare's (2011) framework too concerns itself exclusively with the role of the government and operators, with particular emphasis on indigenous participants.

The significance of the role universities play in the development of national economy is widely acknowledged and actively debated in both developed and developing countries. The popularity of University-Industry interactions has increased with the pace of globalization and economic changes in the dependency on oil in Nigeria. Nigeria is the most populous African Nation with an estimated population of 186 million. Before the discovery of oil in 1956, Agriculture was the mainstay of the economy, however, after the oil discovery; there was a neglect of agriculture and other sectors which hitherto made tremendous contributions to the economy. The past two decades have witnessed Nigeria operating a mono commodity-based economy with about 90% of revenues coming from the oil sector. The roles of the trilateral interaction of University-Industry and Government, therefore, is to commercialise the scientific breakthroughs, innovation and technological achievement into commercial success (Bercovitz and Feldman, 2006; Filippetti and Savona, 2017; Archibugi and Filippetti, 2017). Through Social Network Analysis, an in-

depth investigation of the relationships between the key players in the oil and gas industry and the resulting effects of the linkages was carried out.

A brief review of the history and objectives of Nigerian university system

This subsection highlights briefly the 'journey' of universities which have now become the leading institutions of higher learning in Nigeria, besides colleges of education, technology and polytechnics. Earlier, Nigeria had regarded higher education as important for the development of high-quality manpower. Nigeria matched this with the level of public expenditure on institutions of higher education and the number of scholarships available for higher education at home and abroad.

Following the Ashby Commission report, the Federal Government issued a sessional paper, No. 3, in 1961, in which a target of 10,000 university enrolment was set for 1970. By 1970, the country exceeded this target despite the civil war that caused the closure of the University of Nigeria (Nsukka, established 1955) ─ one of the five premier universities ─ from 1967 to 1969. The other four first-generation universities were University of Ibadan (1948), University of Ife (1961), University of Lagos (1962), and Ahmadu Bello University (1962). Total enrolment rose to 23,228 in the academic year 1967-1969. A remarkable achievement in the early years of universities in Nigeria was that the federal government funded 100% of the expenditures of the institutions (Olaloku *et al*., 1979). So, as at 1960 when Nigeria gained independence, she already had two higher education institutions ─ the University of Ibadan (established 1948, first called the University College, Ibadan affiliated to the University College, London) and the Yaba College of Technology (established 1953).

As the population grew, there was the demand for more universities. The federal government established more universities. These were called 'the second-generation universities'. They were the 12 universities established between 1970 and 1985 to meet the demand for university education especially in science and technology. In the late 1980s, the focus shifted toward a wider view of university education to embrace technology and agriculture. This focus brought the Nigeria's third-generation universities. The universities in these first-three generations are fully-funded and owned by the federal government. During Nigeria's second republic (1979-

1983), the question of even spread of educational opportunities for all Nigerians became prominent in the political agenda of politicians, and this stimulated the birth of 19 fourth-generation universities, which were state-owned. The fifth-generation universities which consist of mainly private and mission universities and a few state-owned universities were established during the third republic which took off in 1999.

These five generations of universities have witnessed different levels of growth, at manpower, infrastructural and technological levels according to the capability and vision of their promoters. Now, Nigeria has 160 universities both public (40 federal; 46 state universities) and private (74 universities). It has about 45 polytechnics and about 37 colleges of education. However, the level of funding and care for universities reduced over these years. The annual budgetary allocation on education provided by the World Bank (2012) provides irrefutable evidence of 8% low ranking of Nigeria in comparison with other countries in Africa and the rest of the world. As education is the driving force for socio-economic development of any nation, sadly, the low priority of educational budget allocation in Nigeria cannot provide meaningful development in the higher education sector.

Review of Nigerian university policy and objectives

The government through its federal ministry of education and the National Universities Commission (NUC) are responsible for the policies on the establishment, regulation, management and quality in Nigerian universities. The national policy objectives on education (2013, p.27) outlines government's goals at all levels of education in Nigeria. Section 5, subsection A outlines the government's policy goals on university education. There are six main goals as represented in numbers.

Number 86 indicates that 'universities shall make optimum contributions to national development' by:
  a) Intensifying and diversifying its programmes for the development of high-level manpower within the context of the needs of the nation;
  b) Making professional course contents reflect national requirements;

c) Making all students part of a general programme of all-round improvements in university education, to offer general study courses such as history of ideas, philosophy of knowledge, nationalism, and information technology; and

d) Making entrepreneurial skills acquisition a requirement for all Nigerian universities.

Number 87 indicates that university research shall be relevant to the national development goals. Attention shall be paid to research and promotion of indigenous knowledge in Nigeria. So, universities shall be encouraged to collaborate with government, industries and the global community in the conduct of research and disseminate the results.

Number 88 indicates that university teaching shall seek to inculcate community spirit in the students through projects and action researches.

Number 89 indicates that voluntary agencies, individuals and groups shall be allowed to establish universities provided they comply with minimum standards laid down by the federal government.

Number 90(a) indicates that technologically-based professional courses in the universities shall include, as components, exposure to relevant future working environment.
Number 90(b) indicates that it is imperative that teachers in professional fields have relevant industrial and professional experience and exposure.

Number 91(a) indicates that a sizeable proportion of expenditure on university education shall be devoted to science and technology. Number 90(b) indicates that not less than 60% of places shall be allocated to science-oriented courses in the conventional universities and not less than 80% in the universities of technology and agriculture.

A critical look at Nigeria's university policies and objectives reveals some challenges that Nigeria needs to fix to raise the quality of education to compete.

First, there is a need for agreeing with all the relevant stakeholders and come up with a captivating and challenging vision of university education in terms of what Nigeria's universities should resemble. It must create a kind of pictorial projections into how the future of the nation's universities should be, showing the targets that are measurable and comparable to the best universities. A good vision for universities in Nigeria should also show the detailed plan or roadmap of the 'how' with deadlines, costs as well as the sources of funding of such targets. Second, such a vision must be communicated skillfully well for the buy-in of everyone most especially the university communities including those to implement and enforce the policies.

Brief review of Nigerian oil and gas policy

The oil and gas industry in Nigeria is the oldest industry in the country after agriculture, and can be said to still be functioning although not at its full capacity. This is as a result of several incidences that that have plagued the upstream, midstream and downstream sectors since exploration commenced in 1908. Although, the government continues to battle these challenges which includes corruption, low production capacity, significant drop in capacity utilisation, oil spillage leading to land contamination and degradation (which has resulted in deliberate destroy of oil pipelines and stations), Nigeria's oil and gas industry still supplies over 90% of government revenue. Prior to oil discovery, agriculture was the main source of revenue and the country exported cash crops which were grown in different parts of the country (Sala-i-Martin and Subramanian, 2008). When Commercial oil and gas activities in Nigeria commenced in 1956, the agricultural industry gradually began to gain less attention as a result of the 'oil boom'.

In 1971, Nigeria registered its membership with the Organisation of Petroleum Exporting Countries (OPEC) whose member countries have firm control over their petroleum resources through their national oil companies, thus leading to the establishment of the Nigerian National Petroleum Corporation (NNPC) in 1977. Following this establishment, two main events occurred which set the course for the operation of the oil and gas industry. Firstly, the engagement of the NNPC in Joint Operation Agreement (JOA) rather than taking direct control of their oil industry as some OPEC member countries did. Secondly, the arrival of other Multinational Oil Corporations (MNOCs) such as Mobil, Gulf, Agip, Safrap (elf), Tenneco and Amoseas (Texaco/Chevron) who were awarded both onshore and offshore licences to remove exploration

restrictions to enable a boost in the daily production of oil. Although Nigeria's maximum crude oil production capacity on a daily basis is 2.5 million bpd (BP, 2012), current average production is about 2.05 million bpd (BP, 2017), owing to the reasons highlighted earlier on.

Following Nigeria's independence in 1960, oil production was on the increase and the first boost came in 1964 upon the offshore discovery of oil in the then Bendel State, by Gulf oil company. At that time, crude oil was being exported for processing because Nigeria lacked refineries. Ideally, we would have expected that with the continuous increase of crude oil production post-independence, and the establishment of refineries, production capacity and capacity utilisation would have greatly increased, unfortunately this has not been the case. Ironically, despite the availability of these refineries, a large amount of processed crude oil consumed in-country are processed abroad. This is as a result of lack of fully functional refineries. Consequently, the discovery of oil as expressed by some schools of thought appear to be more of a curse than a blessing, thus giving rise to the term 'resource curse' (Watts, 2004). The Nigerian government has four refineries, two in Port Harcourt and one each in Warri and Kaduna. These refineries are projected to process 505,000bpd in total but unfortunately, these are not producing at optimum capacity (BMI, 2013).

Having highlighted these set-backs, the Nigerian oil and gas industry has also been characterised by many triumphs. The industry has excelled in terms of presence of international oil companies (IOCs) working in the upstream sector, primarily generating the revenue that services Nigeria. Furthermore, the industry, in recent times, has partially recovered from the problems stemming from the rebels in the Niger-Delta at which time production had declined to about 1.6 million bpd (in 2009). This emergence is mainly attributable to the government's amnesty program.

The Nigerian State, through the IOCs like Shell, Total and ENI, has also witnessed some asset transfer transactions from which indigenous companies have benefitted. This reveals a maturing oil and gas industry where bigger players are re-aligning their asset portfolios to the benefit of newer, smaller players. Most notable of these triumphs was the signing of the NOGIC Act in 2010 which officially established the implementation of the oil and gas local content policy, thus encouraging indigenous participation in both upstream and downstream sectors, as well as other core areas such as supply chain, fabrication and procurement. An example of a new indigenous

player is SEPLAT, which benefitted from a transfer of assets from three different Oil Mining Leases (OML) from Shell, Total and Agip (Nwapa, 2012).

The development of the Petroleum Institutions

The Petroleum Training Institute (PTI) Act of 1972 led to the establishment of the PTI in 1973. Although the institute was established as a prerequisite for the membership of the Organization of Petroleum Exploring Countries (OPEC), it was also set up to train Nigerians to meet the labor force requirement of the Nigerian oil and gas industry. The objective was, and still is:

> ... to deliver quality education and provide efficient technological manpower to build a competent and committed workforce that will sustain and service the continental oil and gas industry. (Petroleum Training Institute, 2011: 13)

In 1973, the Gulf Oil Company Fund was repealed by the promulgation of the Petroleum Technology Development Fund (PTDF) Act No. 25, which established the PTDF specifically to build indigenous capability as well as in-country technological development through training of Nigerians in various industry fields.

'Nigerian Oil and Gas Industry Content Development Bill 2010' with the acronym NOGIC Act (2010). The main thrust of the NOGIC Act (2010) is value addition. Having realized that the lifeblood of Nigeria resides in the oil and gas sector, the Nigerian government aims to utilize in-country human and material resources to add value to the economy. Five specific objectives are highlighted in the policy document. The third objective (ibid, Section 28.1) extends the principle of 'first consideration' to training and employment. The NOGIC Act (2010, Sections 36-40) also states that adequate R&D should be carried out by operators for the promotion, training, research and development in Nigeria. This does not necessarily require operators to engage in R&D directly but expects them to file an R&D plan detailing planned expenditure and how R&D programmes are to be carried out by, for example, involving higher education institutions (HEIs).

Through the scrutiny of the NOGIC Act 2010, the HEI's responsibility to the oil and gas industry is to

"provide knowledge and skills; training manpower; and keeping up to date with industry developments so as to ensure the 'currency' of the HE curriculum"

Stakeholder theory and analytical framework for University interaction

Before addressing the issue of stakeholder theory, Scholl (2002) suggests that the word 'stakeholder' needs be unbundled. He also argues that the definition of a 'stake' should precede that of a 'stakeholder' since that is what qualifies the word stakeholder itself. Following from this, Mitchell *et al*. (1997, p. 858) refer to a stake as *"legal, moral, or presumed claims, or on the capacity to affect an organisation's behaviour, direction, process, or outcomes"*. Having addressed this, the issue of who stakeholders exactly are can now be addressed. For this purpose, we survey extant literature to gather the perception of various authors on who stakeholders are and present a snapshot in **Table 1**.

Critical scrutiny of the various definitions suggests the emergence of certain 'key words' to depict who a stakeholder is. These include interest, support, affect(ed) etc. While we can still argue that the issue of a stakeholder is still subject to debate depending on what perspective and context from which authors determine who stakeholders are, one common perception which resonates on who stakeholders are, are those who can 'affect' or are 'affected' by the objectives of an organisation such as shareholders, employees, suppliers and owners (De Vita *et al.*2015; Freeman and Reed, 1983; Clarkson, 1995; Phillips, 2003; Miles, 2012).

Perspectives on stakeholder theory have developed around three different approaches namely: descriptive, normative and instrumental (Bailur, 2006; Reed *et al*., 2009; Freeman *et al.*, 2004; Donaldson and Preston, 1995; Friedman and Miles, 2002). Generally, the descriptive approach explains the characteristics of stakeholders. The instrumental approach is more pragmatic in that it focuses on understanding how *"organisations, projects and policy makers can identify, explain and manage the behaviour of stakeholders to achieve desired outcomes" (*Reed *et al.,* 2009, P. 136). It is more empirical in nature as it aims to identify any ties and/or relationships that exists among stakeholders. The normative approach provides a more in-depth approach as it critically

examines the dynamics of the existing relationship among the stakeholders. In other words, it investigates how the relationship among the stakeholders' function. However, it cannot be argued that one approach is more important than the other this is because the descriptive approach acts as a necessary precursor to the instrumental and normative approaches (Donaldson and Preston, 1995).

Our study seeks to investigate the role of the oil and gas education in Nigeria. From our research question alongside the discussion of the three stakeholder theory approaches, clearly it appears that the application of the normative approach best suits this study. That said, we agree with Donaldson and Preston (2005) who argue that we cannot divulge the descriptive approach from the entire process. Unarguably this approach seems important as the need to identify the stakeholder groups which could be relevant for this study becomes imperative. Having identified them, we further differentiate them with respect to the level of power and interest they have with regard to our research question.

Bryson (1995) suggests a stepwise approach for stakeholder identification and differentiation. Whilst identification can be carried out using documentary evidences, interviews and focus groups, differentiation can be carried out by mapping the identified stakeholders into the power-interest framework of Ackerman and Eden (2011), of which the level of power and interest range from low to high. For our study, our main focus was the HEI stakeholder group which happens to be our subject matter. Other stakeholder groups are those that have high power and interest (players) within the framework which we have analysed based on our research question as shown in **Figure 1**.

Further, we subject them to analysis using Social Network Analysis (SNA) which consists of several tools to investigate the relational ties among the selected stakeholders in the oil and gas industry.
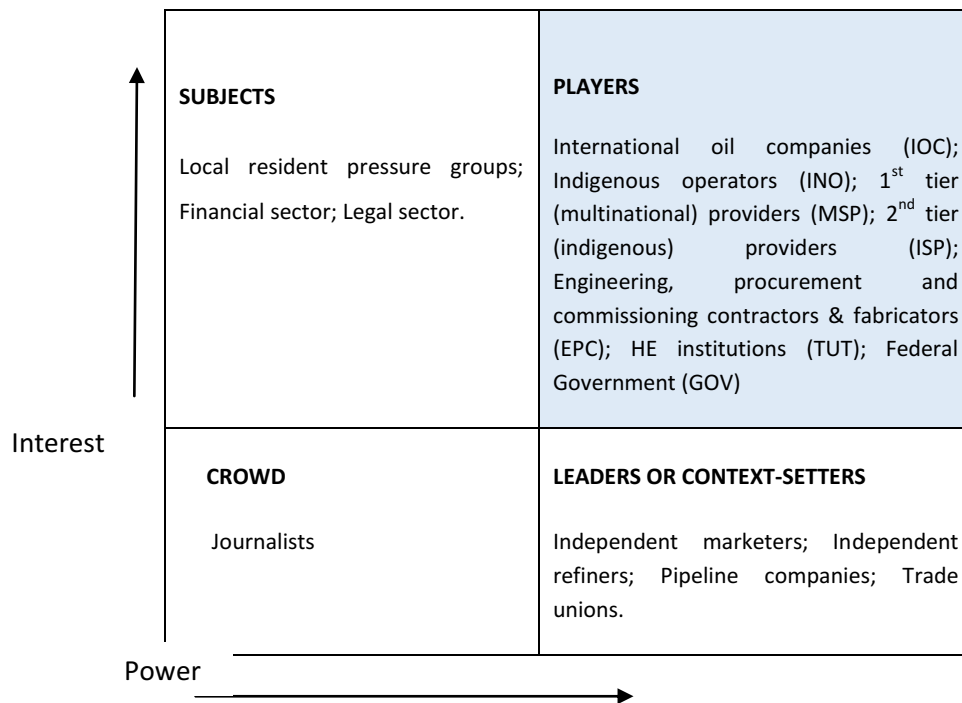
Figure 1. Application of Ackermann and Eden's (2011) power-interest framework

Methodology

For this research, we adopt a multiple sample collection technique which involves documentary evidences and semi-structured interviews.

Scott (1990) refers to documents as artefacts in which their central features are inscribed in text which are produced by individuals and/or groups as part of their jobs or exclusively for their practical needs. In the case of this research, the documentary research method was employed for two main reasons. Firstly, to compensate for the limitations that arise in the collection of data via in-depth semi structured interviews. Secondly, for the purpose of triangulation this enhanced the validity of the results obtained.

Careful selection of various documents was carried out from both primary and secondary sources which include government libraries, company websites, newspapers and accredited magazines, personal contacts from interviewees, government agencies and credible websites. These documents were then subjected to critical scrutiny employing Scott's (1990) quality control

criteria for documentary data: These are authenticity, credibility, representativeness and meaning, which were in line with our research question. Overall, we acknowledge a core limitation in the use of documentary evidence which is, determining the accuracy of the information gathered which relied mostly on our sense of judgment. With regards to handling information that were not relevant to our study, much time was needed to sort out, screen, scrutinise and prioritise the required relevant data.

Given that the research focusses on the role of education in the Nigerian oil and gas industry, our key stakeholder group of focus are the HEIs, who are meant to provide the basic knowledge needed at least for employment into various sectors of the oil and gas industry. Consequently, we realise that there is need to also scrutinize other stakeholder groups who would be beneficial in answering our research question. Therefore we 'identify' other key stakeholder groups in the Nigerian oil and gas industry, guided by a taxonomical definition of who stakeholders are, and subject the identified stakeholders to further scrutiny of mapping with their responsibilities as depicted in **Table 2,** in order to ascertain the key stakeholders relevant for our analysis. This was done using Ackerman and Eden's (2011) framework.

Semi structured interviews were carried out with key participants within the HEI stakeholder group. Subsequently, we interviewed the other stakeholders identified within the oil and gas industry in order to examine the extent of relationship that exists between these stakeholder groups and the HEIs. Participants were recruited via a snowballing approach which we deemed fit because our aim was to interview participants who had in-depth knowledge of the study. In addition, the specific choice for semi structured interviews and not focus groups was aimed at conforming to ego network analysis (Hatala, 2006) which aims to measure individual perspectives and perceptions of participants. This was preferred against the complete network analysis which aims to bring together all the participants. Particularly we could not have subscribed to this option for two main reasons: Firstly, the participants were senior executives in HEIs and multinational oil and gas firms as such, these participants worked on tight schedules and getting them together on same appointment would not be feasible. Secondly, the oil and gas industry in Nigeria is quite volatile and sensitive (Idemudia and Ite, 2006). As such, if we would get unreserved responses from participants, the interview method seemed a better option since participants would likely express themselves better.

Following from this, we investigate the relational structure that exists among these identified stakeholder groups and the strengths of such ties, by means of Social Network Analysis (SNA) which involves the transformation of qualitative data to matrix (valued and binary) form. From then, we analyse the network data to determine both local and global centrality, betweenness and overall network density (Hatala, 2006).

Empirical findings

An even clearer representation of the results obtained from 'dichotomization 1' data, is provided in the sociogram represented in **Figure 2**. The absence of a relationship between HE institutions (TUT) and other stakeholder groups is seen even more clearly in this sociogram format as there is no line (tie) that connects the TUT node with any other stakeholder group. The visual structure reveals that some sort of relationship, either unidirectional or bidirectional, exists between some other stakeholders.
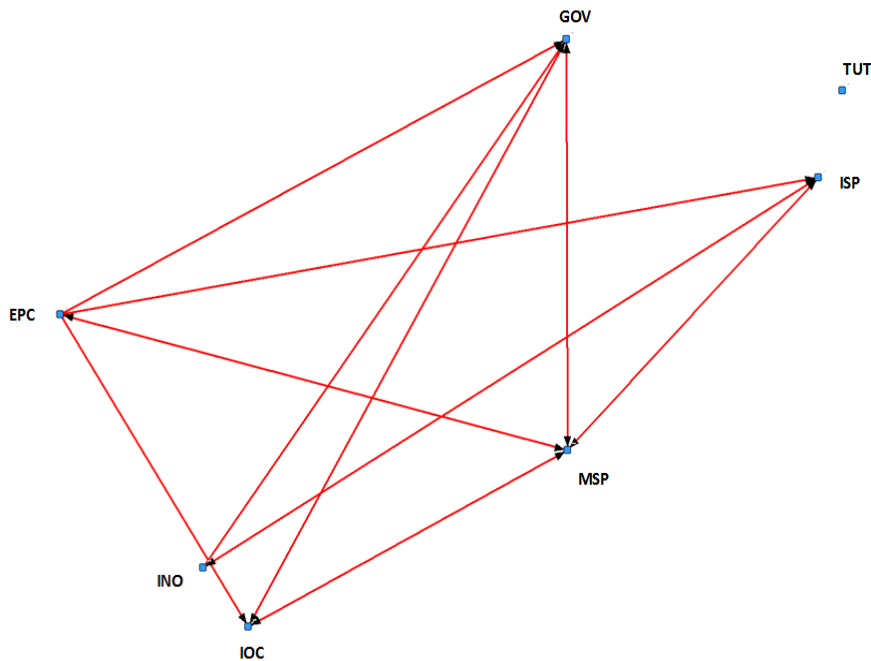
Figure 2. Sociogram of industry network (from dichotomization 1)
Source: Authors' interview data.
Notes: In the absence of a relationship, no line appears (e.g. TUT-; GOV-ISP; IOC-ISP; IOC-INO; INO-EPC; INO-MSP). If the relationship is unidirectional, the line has only one arrowhead pointing to the 'receiver' in the relationship (e.g. INO > GOV; EPC > IOC; EPC > ISP). If the relationship is bidirectional, the line has arrowheads at both ends (e.g. GOV < > MSP; EPC < >MSP; MSP < > ISP).

However, the government only exhibits a bidirectional relationship (**recorded by arrowheads at both ends of a line**) with IOC and MSP, suggesting that there is still a significant level of foreign dominance within the Nigerian oil and gas industry. This finding is of critical importance as it reveals that for local content to be fully developed there is a need for additional bidirectional relationships, particularly between the government and HE institutions, indigenous operators and service providers, so as to promote indigenous capacity and capability development. As Omenikolo and Amadi (2010) argue, the R&D ties between Nigerian universities and the oil and gas industry constitute an important weak link. This is an issue that came out strongly also from our wider interview data, **with one interviewee from the TUT stakeholder group explicitly stating:**

> **To drive LCD, the government itself should establish a strong path linking Nigerian universities' capacity to supply first class graduates with proper, large-scale apprenticeships programs (to be co-sponsored by the State) in foreign-owned as well indigenous operators in the oil and gas industry. Instead, Nigerian universities continue to be highly underfunded, and the scale of such programs is so small so as to make hardly any difference. (Geo-science university tutor)**

Our investigation of the relational structure that exists among the stakeholders also highlights the marginal role played by HE institutions, as evidenced, for example, by the minimal level of local 'centrality' displayed by this stakeholder group vis-à-vis others. This is particularly striking when it is acknowledged that HE institutions are responsible for providing the knowledge base to fuel the development of in-country capacity and competence-based capabilities. The research revealed notable disjoint between academia and industry, indeed the data revealed that the curriculum had barely changed, and as such not in tandem with current industry operations. Interaction between industry and universities tend to be limited to CSR activities, whilst interaction between government and universities are found to be questionable based on past disagreements. The culmination of low standard of education and poor curriculum have contributed to the low impact on the oil and gas content development, which has exasperated the importation of manpower and the repatriation of foreign contract awards. Our findings are summarised in **Table 3**.

Sub- Objective Criteria	HE Institutions			
1. Suitability and employability of skills on the job	Skill set, skill gaps	Government national skill pool	Fairness and equity in selection process – eliminate discrimination	High cadre in management but deficiency in technical skills
2. Dynamism of the curriculum of universities in meeting the current demands of the oil and gas industry	Usefulness of curriculum, collaboration, students; practical experience, graduate competency	Lack of adequate knowledge needed by industry	Curriculum should be revised, up date with advanced know how and make more relevant	Only channel of interaction with industry is through CSR – scholarship, donation/provision of equipment

Table 3: Summary of findings of the HEI

Implications and Future Work

So, what implications and recommendations can be drawn from our findings to increase the relevance of higher education institutions for oil and gas education?

The implication of the absence of relationship between government and HE institutions is that there is no particular connection between the providers of the base knowledge needed by potential employees and the industry players. This triggers the question: 'how can in-country content be developed?' This observation is again reflected in the lip service given to HE institutions in the Local Content Act. In light of this, an urgent need for intervention is recommended as supported by Omenikolo and Amadi (2010). The result suggests that there is still a significant level of foreign dominance and dependence within the Nigerian oil and gas industry. If Nigeria is to fully develop contents, there is a need to ensure that the same bidirectional relationship emerges between the government and indigenous operators and service providers so as to provide indigenous capacity and capability development.

Although the findings suggests that more relationships are starting to develop, clearly the HE institutions stakeholder group still appear to have a low working relationship with other stakeholder groups including the industry players.

On the first sub-objective of suitability and employability of Nigerians in the oil and gas, our study concluded that generally skill sets are acquired after undergoing training provided by employers, there are still gaps in core technical and engineering areas (e.g., fabrication) hence we still see a high number of foreign education especially at Masters and Phd level to bridge the skill gaps, however on the whole employers seem generally dissatisfied on the standard of indigenous graduates coming to the industry. The study shows that once employed and trained, Nigerian graduates ascend to supervisory and management positions. There is some evidence pointing to the government's effort to bridge the gap through skill pool training set up by the NCDMB. Our second sub-objective examined the dynamism of the university curriculum in meeting industry demands and concluded that the basic knowledge provided by the HE institutions has not been adequate in meeting current standards in the oil and gas industry. This has led to industry players being forced to invest in training and re-training of employees. Particular issues on curriculum development have to do with industry interaction and students' practical experience.

The study suggests that Government needs to invest in education to improve the educational standards; curriculum should be dynamic and interactive. Both theory and practice need to be updated and relevant in the international oil and gas market for the Nigerian graduates to compete. Effective review of the oil and gas education in Nigeria demands the ability to take a systems view of a wide spectrum of issues. Future research should consider investigating pertinent pedagogical issues, such as, qualification / certification of the trainers, appropriate curriculum, delivery / assessment modes, certification and re-training are essential considerations in effective energy sustainability. Besides, conducive and supportive learning environment, as well as, effective collaboration with all the stakeholders, is imperative. Attraction, mobility and retention of the experts within Nigeria are also very important. The institutions, government and industry should all work together to address human resources development and sustainability issues; not just "training how to fish", but also considers "fish handling and storage" concerns.

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. Table 1: Who is a Stakeholder? A definitional Taxonomy

Source	Stake
Stanford memo, 1963	"those groups without whose support the organization would cease to exist" (cited in Freeman & Reed, 1983, and Freeman, 1984)
Rhenman, 1964	"are depending on the firm in order to achieve their personal goals and on whom the firm is depending for its existence" (cited in Nasi, 1995)
Ahlstedt & Jahnukainen, 1971	"driven by their own interests and goals are participants in a firm, and thus depending on it and whom for its sake the firm is depending" (cited in Nasi, 1995)
Freeman & Reed, 1983: 91	Wide: "can affect the achievement of an organization's objectives or who is affected by the achievement of an organization's objectives"
	Narrow: "on which the organization is dependent for its continued survival"
Freeman, 1984: 46	"can affect or is affected by the achievement of the organization's objectives"
Freeman & Gilbert, 1987: 397	"can affect or is affected by a business"
Cornell & Shapiro, 1987: 5	"claimants" who have "contracts" with the organisation
Evan & Freeman, 1988: 75-76	"have a stake in or claim on the firm"
Evan & Freeman, 1988: 79	"benefits from or are harmed by, and whose rights are violated or respected by, corporate actions"
Bowie, 1988: 112, n. 2	"without whose support the organization would cease to exist"
Alkhafaji, 1989: 36	"groups to whom the corporation is responsible to"
Freeman & Evan, 1990	contract holders
Thompson et al., 1991: 209	in "relationship with an organization"
Savage et al., 1991: 61	"have an interest in the actions of an organization and ... the ability to influence it"
Hill & Jones, 1992: 133	"constituents who have a legitimate claim on the firm ... established through the existence of an exchange relationship" who supply "the firm with critical resources (contributions) and in exchange each expects its interests to be satisfied (by inducements)"
Brenner, 1993: 205	"having some legitimate, non-trivial relationship with an organization [such as] exchange transactions, action impacts, and moral responsibilities"
Carroll, 1993: 60	"asserts to have one or more of the kinds of stakes in business"-may be affected or affect ...
Freeman, 1994: 415	participants in "the human process of joint value creation"
Wicks et al., 1994: 483	"interact with and give meaning and definition to the corporation"
Langtry, 1994: 433	the firm is significantly responsible for their well-being, or they hold a moral or legal claim on the firm
Starik, 1994: 90	"can and are making their actual stakes known"-"are or might be influenced by, or are or potentially are influencers of, some organization"
Clarkson, 1994: 5	"bear some form of risk as a result of having invested some form of capital, human or financial, something of value, in a firm" or "are placed at risk as a result of a firm's activities"
Clarkson, 1995: 106	"have, or claim, ownership, rights, or interests in a corporation and its activities"
Nasi, 1995: 19	"interact with the firm and thus make its operation possible"
Brenner, 1995: 76, n. 1	"are or which could impact or be impacted by the firm/organization"

Donaldson & Preston, 1995: 85	"persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity"
Gray *et al,.* 1996:45	"Any human agency that can be influenced by, or can self influence the activities of the organisation in question"
Carroll and Nasi, 1997:46	"Any individual or group who affects or is affected by the organisation and its process, activities and functioning"
Argandona, 1998:1099	"Those who have an interest in the company (so that the firm, in turn, may have an interest in satisfying their demands"
Frederick, 1998:361	"Everyone in the community who has a stake in what the company does"
CCBE, 1999:257	"Parties that have a stake in the corporation: something at risk, and therefore something to gain or lose, as a result of corporate activity"
Gibson, 2000:245	"Those groups or individuals with whom the organisation interacts or has interdependencies and any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goals of the organisation"
Ruf *et al*., 2001:145	"Constituencies who have explicit or implicit contracts with the firm"
Orts and Strudler, 2002:218	"Participants in a business (who) have some kind of economic stake directly at risk"
Phillips, 2003a:30-1	"Normative stakeholders: for whose benefit the firm should be managed. Derivative stakeholders: potential to affect organisation and its normative stakeholders
Bucholz and Rosenthal, 2005:138	"people who are affected by the corporation but not integral to its basic identity
Uslay, 2007:35	"A group of people who have a legal title to an asset or a property"
PMBOK, 2008:5	"People who possess specialist or organizational knowledge needed for the work"
Bourne, 2009:2	"A set of people affected by a decision related to the work or its outcomes"
Parmar, 2010:44	"People who are treated in a certain way or who have a particular right (legal or moral) protected"
Gurkov *et al*., 2011:4 very	"A person, group of persons, organisation , network or institution that supplies crucial resource for the existence of the firm and is capable to claim for an adequate return for the resource supplied"
Miles, 2012:260	"An association or group impacted by the work or its outcomes, or have the ability to impact (or influence) the execution of work or its outcomes"

Source: Developed/updated by the author drawing from the earlier taxonomy developed by Mitchell et al. (1997. p.958)

Table 2: Stakeholder Identification and Responsibilities to oil and gas industry

Stakeholder	Responsibilities to oil & gas industry	Involvement and power in influencing LCD	Level of power on employment	Level of influence on emerging local firms	Level of interest	Remarks	Overall assessment
HE institutions	(i) Providing knowledge and skills; (ii) Training manpower; (iii) Keeping up-to-date with industry developments so as to ensure the 'currency' of the HE curriculum.	Indirect	Strong	Medium	Medium	Although HE institutions (TUT) may not have a direct involvement they are expected to play a major role on employment since they should supply industry with an educated and skilled workforce and by this they are considered to have a strong influence.	Player
Indigenous operators	(i) Development of manpower and equipment to globally competitive standards through JVs with IOCs and MSPs (NOGIC Act, 2010, Sections 13 & 15); (ii) Providing all fabrication and welding activities (ibid, Section 53).	Direct	Strong	Medium	Strong	INOs are important since they are involved in exploration and production of oil, and because of their recruitment potential (though they have less influence on the development of entrepreneurs than IOCs).	Player
Federal Government	(i) Monitoring, coordinating and implementing the Act provisions via the Nigerian Content Development Monitoring Board (NCDMB) and other parastatals (NOGIC Act, 2010, Section 4); (ii) Protection of domestic industries (ibid, Section 3.2); (iii) Setting targets for LCD and growth of R&D (ibid, Section 36); (iv) Setting up the NCCF to provide a platform for industry collaboration (ibid, Section 57); (v) Regular assessment of LCD performance (ibid, Section 62).	Direct	Strong	Strong	Strong	The government (GOV) is the regulators of the oil & gas industry and, as such, it is directly involved. It also regulates employment within the industry whilst enforcing compliance of the LCD policy. Undoubtedly, the government has a strong interest because the oil & gas industry constitutes its main source of revenues.	Federal Government
International operating companies	(i) Ensuring Nigerians are given first consideration for employment & training (NOGIC Act, 2010, Section 10.1.b); (ii) Developing indigenous capacity in compliance with the Act by employing Nigerian nationals (ibid, Section 11.3);	Direct	Strong	Strong	Strong	IOCs are critical to the industry because they are involved in exploration and production of crude oil and other major activities. They have a strong influence on employment and on emerging entrepreneurs.	Player

	(iii) Submitting a Nigerian Content Plan to the Board setting out how they will give first consideration to Nigerian goods & services (ibid, Section 12); (iv) Developing indigenous firms through partnerships and JVs (ibid, Section 13); (v) Providing the Board with Employment & Training Plan for every project to be undertaken and declaration of expatriate quota (ibid, Sections 29-34); (vi) Employment of Nigerians in junior and intermediate cadres (ibid, Section 35); (vii) Submission of R&D plan and R&D reports to the Board (ibid, Sections 38 & 39).					

Source: Authors' findings based upon scrutiny of NOGIC At (2010) and field survey (interviews).