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Review

A Review of Job Role Localization in the Oil and Gas Industry

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Abstract: Job role localization is a strategic local content solution used by countries bearing natural resource stocks to maximize the long-term benefits of exploring and producing them. Currently, there is significant variation in how countries and organizations plan and implement local content and job role localization strategies; hence, this paper aims to gather, classify, and discuss relevant literature with a view to identify best practices for future application. After a multi-dimensional discussion of key terms relevant to the topic, the drivers and theoretical underpinnings of local content are examined, followed by an assessment of job role localization literature qualifying enablers and barriers to localization. A critical discussion on the means of evaluating local content policies summarizes the findings of this critical review.

Keywords: local content; job role localization; oil and gas; extractive industries

1. Introduction

Job role localization (JRL) is the replacement of expatriates by competent host country nationals [1]. JRL has significant business benefits; however, achieving successful JRL has major challenges. Within the oil and gas (O&G) industry specifically, JRL is increasingly becoming an imperative for O&G companies.

Worldwide, O&G companies are required to localize job roles in order to comply with the host government's local content legislations. Local content legislations are employed to encourage value-addition to the economy by enabling cross-sector linkages, increasing local participation and avoiding negative economic impacts associated with O&G activities. Within local content legislations, JRL is required of O&G companies as an approach to increase the number of local people employed within the sector.

O&G companies frequently face stringent local content targets, with tight timelines and pressure from both government and society to create local jobs. This is particularly challenging for O&G companies operating in nascent hydrocarbon-producing countries, where there is often a lack of local workforce with the required skills and experience. This review paper seeks to accumulate and critically discuss relevant literature, informing further research on the topic of JRL.

A large body of existing research describes how O&G and other extractive industries can stimulate employment, encourage local entrepreneurship, reduce poverty, increase knowledge creation and generate economic prosperity [2–4]. The O&G industry has the opportunity to transform economies due to its capital intensive nature [5]. Achieving this meets the values of the three principal stakeholders: the government, the O&G industry and domestic population. Generally, governments seek lasting economic growth from O&G production; O&G companies seek profit maximization for shareholders and local people seek tangible prosperity [6]. Specifically, JRL is valued by governments as they can increase the number of national economic contributors, leading to a knowledge-based economy and multiplier effects within a country's economy [7]. For local people, they can gain access to employment opportunities, increase their competencies, and become internationally competitive. For O&G companies, they can be viewed positively amongst the local population, their own employees, the government, and have the potential for cost reductions [8].

However, there are several barriers to JRL, such as limited experience, qualifications and skill levels within the local labor market, a lack of understanding amongst local people of the parent organization's culture, and the preference of employing expatriates by multi-national corporations (MNCs) [9,10]. The risks of employing inexperienced and under-qualified people can have a devastating impact on human life and on the environment in the event of a disaster occurring, as well as impacting the reputation and finances of O&G organizations [11]. Thus, O&G companies are notoriously risk averse when it comes to recruitment, selection, and succession planning.

Despite these challenges, it has been argued that successful JRL has more advantages than disadvantages [12–14]. It is seen as a solution to reduce expatriate failure rates, improving rapport and confidence amongst national staff, which in turn increases retention rates and improves government relations [15,16]. Furthermore, many academics claim that JRL reduces costs [8,17].

The O&G industry suffers from commodity price fluctuations, which impact the budgets of host nations and O&G companies [18]. In recent years, oil price has dropped from $115 USD in 2014 to a low of $35 USD in 2016. This led to a reduction in O&G project activities and investment in education and training [19]. As a result, O&G companies have sought increased efficiency to reduce their costs. However, many still have significant local content requirements and face other challenges when planning their local content and consequent JRL strategies. What is the definition of 'local' [20]? How much localization should be pursued [17]? Whose responsibility is it to increase the employability of nationals to enable companies to localize job roles [21]?

The majority of existing local content studies within extractive industries have focused on mining [7]. One reason for this seems to be the challenge of researchers gaining access to secondary empirical data from O&G companies [22]. As a result, studies that assess the impact of O&G often utilize generalized means of analysis, such as multipliers, input-output tables and GDP statistics [23]. This literature review primarily focuses on the O&G sector, but draws upon the broader extractive industry, due to the parallels between the O&G and mining sectors.

The literature review which follows has been organized into four sections. The first section is focused on definitions. The second section examines local content drivers and theoretical underpinnings. The third section considers JRL literature examining the reasons why companies localize job roles and what the barriers to localization are. The fourth section provides a critical discussion on barriers and means of measuring, monitoring and planning local content.

2. Defining Local Content, Localization and Job Role Localization

Three main definitions are central to this study: 'local content', 'localization' and 'job role localization'. There is no single agreed definition of local content. Local content is a legislation that requires companies to increase value in the economy through technology-transfer, local supply chain utilization and the provision of local employment opportunities. An example of a local content legislation is given by the Government of Ghana's Petroleum (Local Content and Local Participation) Regulations [24], which require companies to achieve 90% localization within the first 10 years of operation. Two definitions of local content are included in Table 1, from local content best practice papers that are widely referred to by the O&G industry.

Local content differs from localization. In globalization theory, localization refers to how MNCs adapt to local needs, tastes and expectations. For Hines [25], "localisation is a process which reverses the trend of globalization by discriminating in favour of the local" and for Shuman [26], localisation "means nurturing locally owned businesses which use local resources sustainably, employ local workers at decent wages and serve primarily local consumers".

Localization in Human Resources (HR) theory and localization in globalization theory are distinctive issues. Localization within the HR literature refers to the replacement of expatriate management staff by competent local people. There are abundant examples of such initiatives among existing literature, whether in a petroleum company in the United Arab Emirates [27], within a variety of private sector MNCs in Papua New Guinea [28], within the gold mining sector in Ghana [29], or Western businesses operating in China [15]. Localization is often used interchangeably with workforce localization, nationalization and management localisation [30,31] and is specifically focused on employment. In contrast, definitions of localization in the globalization literature refer to products, goods and services [1]. Table 2 details four definitions of localization within the HR context, highlighting the similarities in definition across different authors.

Table 1. Definitions of 'local content'.

Reference	Definition of 'Local Content'
IPIECA, 2016, p. 8 [32]	"The local resources a project or business utilizes or develops along its value chain while invested in a host country."
Tordo et al., 2013, p. 1 [23]	"The extent to which the output of the extractive industry sector generates further benefits to the economy beyond the direct contribution of its value-added, as through links to other sectors."

Within O&G, Playfoot et al. [33] combine the globalization and HR theories by suggesting that localization refers to "the operation of an O&G producing business which functions sustainably and profitably in the local environment. Its operation contributes to building a local supply chain, maximizes the use of local staff resources by strengthening education and training institutions and drives local procurement of goods and services".

Table 2. Definitions of 'job role localization' (source: various).

Reference	Definition of 'Localization' in HR Context
Potter, 1989, p. 26 [1]	"Effective localisation has occurred when a local national is filling a required job sufficiently competently to fulfil organisational needs".
Wong & Law, 1999, p. 26 [10]	"Localization refers to the development of job-related skills within the local population and the delegation of decision-making authority to local employees, with the final objective of replacing expatriate managers with local employees".
Selmer, 2004, p. 1094 [30]	"Localization refers to the extent to which jobs originally held by expatriates are filled by local employees who are competent to perform the job".
Bhanugopan & Fish, 2007, p. 366 [28]	"Localization is a process in which local officers increase their competencies and consequently improve their performance. The main objective is to train and develop locals to enable them to replace expatriates with competency and efficiency".

Differentiating local content, localization and JRL is therefore central to this study. Drawing upon the above definitions, Table 3 provides new definitions of local content, localization and JRL, as compiled by the present authors.

Table 3. Researcher definitions of local content, localization and job role localization.

Term	Definition within this Study
Local content	A legislation applied by governments of hydrocarbon producing nations to add value to the economy by requiring companies to employ nationals and source goods and services nationally.
Localization	The practice of building the capacity of and utilizing a national supply chain and developing and employing a national workforce to meet or surpass legislated local content targets.
Job role localization (JRL)	The process of training and developing nationals with the appropriate education, competencies and experience to enable O&G companies to replace expatriates with nationals.

3. Local Content

3.1. Introducing Local Content Policies

Local content policies require O&G companies to implement local capacity building initiatives to train and employ local people and source local goods, services and materials. This can create economic growth and stimulate linkages with other sectors and lead to economic diversification [34,35].

In recent years, governments have shifted their focus away from only revenue generation from taxes to a more long-term approach by using local content policies to generate linkages [36]. Over 90% of resource-producing countries have local content legislations [37]. Worldwide, these legislations have been implemented to different extents and with varying levels of success [35].

O&G project lifecycles can be decades-long, meaning that they have the potential to have long-lasting impact. However, host governments' party leadership can change every four years and the local management of O&G companies can change frequently too [8]. These issues can impede the effectiveness of local content legislations and their implementation.

The majority of existing local content research has examined local supply chains over local employment [38–42]. Despite the limited research into local employment, local content policies have the opportunity to advance domestic knowledge base by building the competencies and capabilities of local people to become internationally competitive [39,43].

3.2. Drivers for Local Content

Governments principally employ local content policies to stimulate value-adding activities that increase the utilization of domestic goods and services and encourage local employment to replace foreign alternatives [23]. Furthermore, effective local content policies can lead to strong linkages with other sectors and lead to positive spill-over effects [3]. Local content seeks to retain O&G benefits locally. Without such policies this frequently does not happen, largely due to O&G companies' existing international workforce and procurement practices [44].

Local content is one of the main methodologies employed by governments to avoid the 'resource curse', which refers to the reduction in economic growth from O&G activities [45–48]. One aspect of the 'resource curse' is the risk of 'Dutch disease', when the "resource movement effect" causes capital and labor to be focused on the O&G industry. This can lead to a 'crowding out' of existing sectors, such as agriculture, which reduces the competitiveness of local goods and services [49–51]. This is exacerbated by global fluctuations in O&G price and can lead to a dependence on O&G revenues [52]. The impact of the 'resource curse' and 'Dutch disease' on economies in an emerging O&G industry has been well documented [53–56].

Local content policies encourage the participation of local companies and increases direct, indirect and induced employment of local people [57]. However, whilst the O&G industry is highly capital intensive, it does not guarantee extensive job creation, due to minimal labor requirements. Employment and local procurement opportunities are therefore negligible. This can lead to frustration and pressure from the domestic population if they do not feel tangible trickledown benefits from O&G activities [23,58–61]. As the domestic population provides the 'social license to operate', avoiding any discontent amongst the national population is a driver for governments and O&G companies to ensure the effectiveness of local content policies.

3.3. Avoiding Local Content Failures

Local content has had mixed successes worldwide. Notably many African nations have not maximized the exploitation of their natural resources for the benefit of local people [39]. Successful models of local content worldwide include Botswana, Norway, Chile, Malaysia, and Indonesia [62], whereby effective resource management, supported by strong institutions, policy design and implementation have led to economic transformation. In contrast, those which have not been so successful include Nigeria, Chad, and Angola [62]. In these countries, this can be linked to historically weak institutions, where poor governance leads to a misuse of resource rents, non-productive investment, increased likelihood of corruption, and significant social, and economic polarities [52,60]. Considering country specific contexts is important in understanding why local content strategies succeed or fail [32].

Norway is widely considered the most successful example of a country creating lasting positive impacts from its O&G activities. Norway's robust policies, strong institutions, quality education system and industrial background has supported the country's economic transformation [63]. However, Huem [43] argued that replicating Norway's experience is virtually impossible for new O&G producing nations. Despite this, lessons can be learned from international successes and failures.

In a study of local content implementation across six countries, Nordås et al. [63] found policy design and implementation to be the crucial factor. Despite the wealth of natural resource across Sub-Saharan Africa and the fact that governments have put significant efforts into attracting MNCs, many nations have not benefited from the resources due to poor execution of policies [40,64].

Institutional quality, strength, and transparency are therefore critical to ensuring that policies are effectively managed and monitored [65,66]. Weak institutions can lead to 'voracity effect', whereby governments overreact to O&G revenues, causing reduced economic growth [67,68]. Furthermore there is a risk of rent-seeking behavior, corruption, and autocratic governance [7,69].

Eighty percent of hydrocarbon-producing countries struggle with governance [70]. Newly producing O&G countries are most at risk of poor resource management, resulting in unstable regulations that extenuate pressure on relationships between government, industry and the domestic population [71,72]. As such, the strength and quality of national institutions is important [73,74]. Producer friendly institutions, which follow the law and promote state growth, act accountably, bureaucratically and avoid corrupt behaviour are most likely to have effective local content mechanisms [50,60,75].

For nascent hydrocarbon-producing countries, there are challenges in legislating local content due to uncertainty about the amount of resource available, the lack of experience in O&G, and minimal governance capacity [76]. Additionally, it is important to avoid the seven pitfalls described by Marcel et al. [76] and included in Table 4.

Table 4. Seven pitfalls to local content policies [76].

Number	Local Content Pitfalls
1	A lack of long-term strategy focused on wider economic diversification and industrialization.
2	Limited understanding of the resource potential and country's capacity.
3	A lack of awareness of the oil industry's strategies and procurement methods, leading to policies misaligned with the industry.
4	Poor monitoring, measuring and reporting mechanisms leading to poor enforcement of regulations.
5	Corruption, rentier behavior is promoted, and local elites feel the benefits rather than expanding taxation.
6	Misalignment of local suppliers and education institutions to industry needs.
7	Poorly defined terms and terminology.

Successful implementation of local content policies is, therefore, largely linked to institutional strength, governance, and rigor of the policies. Policies should be adaptive and driven by long-term national economic development [76]. It is widely agreed that MNCs must link their strategies with these policies to lead to lasting positive socio-economic impact [40,69,77,78].

However, local content policies have been criticized. Local content policies are often regarded as excellent in theory, but if local people and businesses do not have the capacity or capability to meet industry needs, this can prevent the policies from being effective [79]. Additionally, local content policies have been criticized for not complying with the World Trade Organisation's international trade regulations, which incorporate constrictions to incentivizing nationalism of skills and services [42,80,81]. Additionally, Tordo et al. [23] describe other issues, including the potential misallocation of resources to non-competitive sectors, the potential to exacerbate market failures, and lack of coherence with broader institutional frameworks. Regulations that are too stringent can "exacerbate supply bottlenecks", which can prevent other sectors from advancing, create inefficient economies and lead to corruption.

3.4. Oil and Gas Companies and Local Content

Ngoasong [77] found that O&G companies mainly source goods, services, and supplies in order to comply with local content rules. The findings showed that recording local content activities, such as hiring locally and prioritizing local contractors, is very challenging for O&G companies. Reporting and accountability mechanisms, ad-hoc requests for evidence of localization, and transparency all make local content compliance more difficult.

O&G companies often express narratives of successfully building capacity, training local people, developing supply chains, procuring locally, and investing in communities. However, it is questionable how truthful and effective these activities are [42,82]. For example, Henisz et al. [78], believed that O&G companies only meet local content quotas to legitimize their position with the host government and local stakeholders. Weldegiorgis, Ali, & Sturman [83] suggested that "too often local employment and procurement policies have been simply a good will gesture".

O&G companies tend to work in isolation due to their competitive nature. This means different organizations frequently attempt to solve the same problems without addressing systemic local content issues. However, evidence suggests that when O&G companies do work together as a cluster, this leads to greater knowledge sharing, a reduction in costs, advances in local competitiveness, and capability in line with the needs of industry [4,84,85].

The effective application of local content regulations by O&G companies can lead to several long-term benefits, including local job creation [43,86]. However, building the capability of local people and local companies requires significant effort from O&G companies through direct investment and ongoing support [39].

4. Job Role Localization

4.1. Introducing Job Role Localization

JRL is the process of training and developing nationals with the appropriate qualifications, competencies and experience to enable O&G companies to replace expatriates with nationals. JRL is one aspect of an organization's localization strategy to ensure that they comply with local content legislations.

Existing HR literature regarding JRL has traditionally focused on the replacement of management staff [14,22,30,87–89]. In Ghana, for example, Oppong [29] considered the localisation of management within mining MNCs. In a Chinese context, Fayol-Song [8] reported that JRL reduces costs, retains local talent, raises local competencies, replaces inappropriate expatriates, and strengthens relationships with the government. Whilst in Papua New Guinea, Bhanugopan & Fish [28] highlighted the obstacles faced by the private sector when attempting to localize job roles.

There is a dearth of studies regarding JRL in the O&G industry [27,90]. The majority of previous studies have focused on the Middle East [21,89,91] and China [8,15,92].

Whilst there are similarities and lessons to be learnt, JRL issues in the United Arab Emirates [27], Saudi Arabia [93,94], and China [95] are different to those of other countries. For example, in the Middle East, the commitment of local managers, political stability, and public sector salaries being greater than that of the private sector affect JRL [91,96]. In China, personal 'Guanxi' networks, local manager retention issues and/or language barriers impact JRL [97,98].

Despite differences, similarities also exist within the literature regarding the motivation behind JRL and the barriers to success.

4.2. What Constitutes 'Local'?

The definition of 'local' is controversial. Although local usually refers to the national level [3], it is also used to refer to affected communities close to operations [23]. Terms such as 'local', 'regional', 'national' are often used interchangeably; for example, in the United Arab Emirates, localisation is referred to as Emiratisation, and historically Africanisation of African states [27]. Nwapi [20] reported that governments often do not have a clear definition of the word 'local'.

Often people living in proximity to the resource extraction area are not considered. This can lead to "outsiders" benefitting, creating conflict amongst local communities and impacting O&G companies' 'social license to operate' [20]. In the case of Ghana for example, Nwapi [20] explained that "there is no requirement anywhere in the regulation for any consideration to be given to communities located in the proximity of the resources". When locally affected communities do not benefit, this can lead to 'resource curse' symptoms at the subnational level [99,100].

Hiring nationals from across a country can create trickle-down effects within different communities and provide "overall benefit to the economy" [23].

4.3. Reasons for Job Role Localisation

There are many benefits of JRL for O&G companies. One reason suggested by many academics is that JRL reduces costs. It is argued that expatriate employment costs are far greater than those of local people due to higher salaries and additional compensation such as housing, private drivers, medical cover, travel, schooling for children, and security [10,14,27,28,30,33,92,101–107]. Bhanugopan & Fish [28] found that expatriates were paid 60–80% more than local people doing the same job. All the participants in Fayol-Song's study [8] believed that JRL can lead to cost savings. There is, however, an absence of empirical evidence to support claims that JRL either reduces or increases costs [17]. This may be attributed to the difficulty there frequently is in obtaining reliable empirical information or statistical data [22].

Good relationships with stakeholders are critical for O&G companies. When the local workforce is included within extractive projects, obtaining the 'social license to operate' is easier [13,108]. Furthermore, in addition to being seen favorably by local communities, localization improves relationships with national and local governments [109,110]. It is argued that local employees understand the national culture and institutional context in a way that expatriates cannot [30,105]. Localization can lead to better integration of the international company into the local context due to in-depth local knowledge that local people have [106].

Local people have greater access to business networks and find it easier to build valuable personal relations locally [30]. Hailey and Lam & Yeung [12,92] also explained that local management have better relationships with junior staff, increasing cooperation amongst lower-ranked nationals, which in turn enhances the retention and loyalty of local staff at all levels [8,106]. Furthermore, the morale of local staff is improved due to proven career pathways.

Expatriate challenges are an additional reason to localize. Expatriate failure is a major issue for MNCs. This can cause significant costs when an expatriate returns home sooner than expected [110,111]. MNCs have the challenge of selecting appropriate candidates for expatriation, those that are culturally sensitive and embrace localization, because poor selection can have costly long-term knock-on effects [8,112]. Furthermore, it is far more challenging for expatriates to truly understand and immerse themselves within the local context of the country [104,113]. Fayol-Song [8] also argued that expatriates are replaced every two to three years, so localization is a solution to the frequent shift in expatriate management, as local employees remain locally for much longer.

It has also been argued by Hailey & Harry [110] and Playfoot et al. [33] that localization not only makes business sense, but is ethically the right thing to do. Furthermore, localization demonstrates a commitment to the country [30]. Additionally, JRL is a robust mechanism during politically tumultuous times whereby local people remain committed to maintaining operations when expatriates must return home, as was experienced by Wintershall in Libya [79]. JRL, therefore, has a number of drivers that can give a competitive advantage to companies that successfully implement localization strategies [13].

4.4. Barriers to Job Role Localization

Whilst there are multiple arguments in favor of JRL, there are also many barriers. The most commonly cited issue is the lack of local people within the labor market who have the required qualifications, training, and experience required [9,30,92,103,110,114]. This is exacerbated within the O&G sector due to requirements for highly skilled and highly experienced people within management positions [115]. Furthermore, the high costs of training and developing local people can be prohibitive [28,116]. Nor is it just an issue of technical skills and competencies, but also one of cultural norms, which might not be compatible with industry needs [21,28,117]. MNCs must consider intercultural sensitivities and the local context in order to compete globally [97,118].

An undersupply of top talent leads to competition for the same people amongst different companies from multiple sectors [30,103]. The lack of available talent is due to the mismatch between the provision of skills by the public education system and the needs of industry [9,21,94]. Poor leadership and limited investment by governments into aligning education with industry requirements have been attributed to this mismatch [28].

It has been argued that companies have traditionally struggled to implement successful localization strategies [14,92]. This can frequently be linked to inappropriate succession planning in which employees are promoted too early and/or into unsuitable positions, or the wrong people are chosen [8]. This compounds biases within MNCs towards the employment of expatriates, leading to the exclusion of local people [29,110].

Toumasi [119] suggested that a government's legislative targets around succession planning timelines can put pressure on companies to hire and promote too early. It has been argued that ambiguous and ineffective localization policy designs can negatively affect JRL [9]. Hailey [12] claimed that pressure to localize the wrong people can come not only from governments, but also from local managements and parent companies.

Inappropriate selection, training, and planning of the expatriate workforce is one of the most commonly agreed barriers to localization [13]. Potter [1] noted that the attitudes of expatriates can be an issue, which Selmer [30] described as an unwillingness to embrace localization. It is common place that expatriates believe they take on extra work on top of their existing workload to train and develop local staff, who then go on to replace them, which causes tension amongst expatriates [31,110]. However, it is not just the attitude of expatriates that act as a barrier. The attitudes of local people can impede localization; for example, an underestimation by local people of the skills and requirements needed for particular job roles [1,21].

Trust issues are frequently reported as a barrier. Expatriate management can have concerns about control being handed to local managers [92]. O&G companies have a culture of employing expatriates as they often don't trust local staff and can perceive the productivity and attitudes of local people as a barrier [120]. Companies seek to avoid risks of local people being opportunistic and acting in self-interest [30]. Hailey [12] also described issues of trust of expatriates by the local workforce.

Conflict can occur between expatriates and local people. Notably, differences in salaries and compensation can cause tension and resentment [12,21,103]. Bhanugopan & Fish [28] explained that local people can perceive expatriates as arrogant; aggravated by communication barriers, cultural misunderstanding and differing business standards. However, it is also argued that expatriates are indispensable to business success overseas. Local people can lack awareness of company culture and parent company strategies, whereas expatriates often come with head office experience. This means that expatriates understand the corporate culture and strategy and act as a bridge between the local setting and the head office [17,30,92]. Furthermore, expatriates are required for their knowledge and experience transfer and ease of control by head office [30,92].

Communication and commitment issues affect successful localization; subsidiaries and parent company have different levels of commitment to localization [13,21]. Subsidiaries often maintain Western practices, following the parent company culture and protocols without adapting to the local context [102,121–123]. Western HR practices can prevent the advancement of local people into management roles [29].

5. Critical Discussion

5.1. The Unique Case of Oil and Gas

Although vast in capital expenditure, direct employment within the O&G industry is minimal [124–126]. Kim et al. [7] highlighted how an offshore O&G project produces fewer direct jobs than an onshore O&G project, largely due to minimal space on-board FPSOs or offshore rigs. There are significant opportunities for greater impact through indirect and induced employment [127].

In addition to the limited number of direct jobs created, O&G projects are highly dependent on contractor organizations [128]. In some cases, only 10% of the workforce are employed by the O&G operating company [129]. Contractors, according to Ngoasong [77], are often not embedded within the host nations or incentivized to add-value locally, meaning local investment may be negligible. As such, there are different definitions for types of workers within O&G projects. 'Direct workers' can be defined as workers directly engaged a company with a clear employment relationship and complete control over the working conditions and treatment [130]. 'Contracted workers' can be defined as workers engaged through third parties to perform work related to core business processes of the project for a substantial duration [130]. Indirect employees are 'supply chain workers', known as "workers engaged by the company's suppliers providing goods and materials" [130].

Employment levels fluctuate throughout different phases of the O&G project lifecycle [6,11]. There are limited numbers available during exploration, peak numbers during the construction phase, relatively few during operations and gradually decreasing in the decommissioning phase [23,84], as shown in Figure 1.

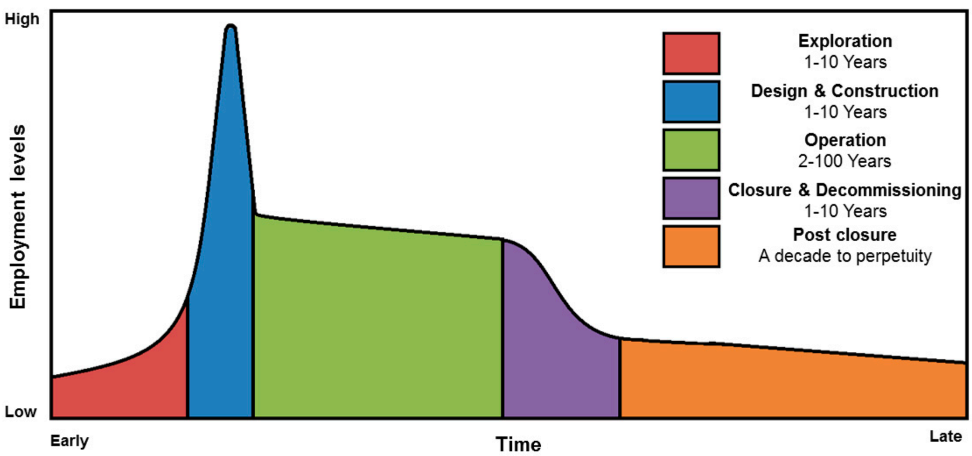

Figure 1. Employment opportunities in the lifecycle of a project (source: modified from [131]).

O&G companies must forecast their manpower plans to fit with the fluctuations in employment requirements. Workforce planning ensures that the company has "the right number of people, with the right skills, in the right place and at the right time" [132]. This can lead to cost reductions and is a strategy for dealing with tumultuous economic times. Table 5 shows the challenges and enablers of workforce planning.

Table 5. Challenges and enablers of workforce planning [133].

Challenges	Enablers
Lack of focus in organization strategy	Collaboration about requirements between the business, HR and finance
Constantly shifting strategy	Workforce champions in the business
Too much focus on the operational and budgetary planning at expense of long-term planning	Good processes to feed information about the business needs
Processes don't join during the planning cycle	HR and the line working to understand future needs
Plans are not responsive to changing environments	Understanding the supply and demand for labor
Poor quality data	Bottom-up communication feeding into planning
Too much focus on the numbers of people required and not on capacity to build future skills	Good quality data, with adequate analysis and leadership support analysis
Overcomplicated and trying to achieve too much too soon	Regular planning cycle and reviews to feedback into plans
Lack of planning skills	Developing managers' workforce planning skills

5.2. Industry Standards as a Barrier

The O&G industry has very high standards [6]. This can act as a barrier to localization, if the standards are not available locally [39]. This leads to MNCs preferring expatriates, who meet the exacting requirements [28]. Nordås et al. [63] showed that for emerging producing countries, there is frequently an immature local workforce, which exacerbates the challenge of companies finding local people who meet the industry standards. This can apply even to longstanding producing countries such as Angola [134].

The events of the Piper Alpha in 1988, Exxon Valdez in 1989, Texas City Refinery in 2005 and Deepwater Horizon disaster in 2010 highlighted the need for safety compliance, standards, and competency assurance within the industry [11,104]. As a result of these events, O&G companies have had to comply with stricter international standards to maintain competitiveness, profitability, and operational safety. This has resulted in companies relying upon an international workforce and supply network [42,135].

Being competent requires the right combination of skills, knowledge, and experience, and "the ability to undertake responsibilities, and to perform activities to a recognised standard" [136]. O&G companies require a combination of technical and behavioral competencies, which define the appropriate demonstrable capabilities for a job role [137].

Due to their risk-averse nature, O&G companies often require extensive experience, qualifications and training, which act as a barrier to local people who lack these. Potter [1] questions whether companies set qualification and experience requirements too high, precluding localizationfrom succeeding.

Government investment in national education systems as a result of O&G revenues can advance local human capital [138,139]. However, several studies reported that hydrocarbon resource wealth can have negative impacts on public education expenditure [58,140–143]. In the case of Ghana for example, Obeng-Odoom [144] explained that oil wealth has not negatively impacted investment in public education, with increased demand and supply of education services as a result of O&G activities. Causes of skills shortages in Sub-Saharan Africa include the lack of educational capacity, poor technical vocational education and training (TVET) capacity, lack of accreditation, and an extensive demand by the industry for highly skilled workers [85]. To address local skills shortages, Sigam & Garcia [4] suggested that the government and O&G companies must be directly involved in building local education capacity or else companies are forced to hire high proportions of expatriates.

The mismatch between education provision and industry needs is a major barrier [4], particularly, a lack of field training or on-the-job training opportunities within education [28]. With such stringent requirements from O&G companies that prioritize safety, localizing job roles can be additionally challenging.

5.3. Measuring, Monitoring and Planning Local Content and Localization

Traditionally, O&G companies have struggled with the measurement, monitoring, and planning of local content and localization [23]. Understanding, evaluating, and explaining the results from metrics is challenging because local content issues are often intangible, hard to quantify, and it is difficult to balance regulatory and business needs [41,42,145].

Several valuable studies have investigated the impact of the O&G sector on job creation [146,147]. Agerton, Hartley, Medlock, & Temzelides [148] studied an array of economic impact assessments, noting that Input-Output methods (such as those used by Kim et al. [7]) can lead to higher expectations of employment, and called for a new model. Weldegiorgis et al. [83] have recently completed a systematic overview and analysis of 25 different instruments, tools, and mechanisms for organizations and governments to measure the impact of hydrocarbon projects.

Within the wider sphere, there have been numerous studies, reports, and documents outlining frameworks, models, tools and decision trees, recommending how to maximize local content strategies to increase shared value creation [149–151]. There were limitations with many of these guidelines; for example, too theoretical [33] or a lack of involvement from governments [32].

6. Conclusions

Job creation for local people is a principal objective of local content legislations. O&G companies and their contractors are mandated by host governments of O&G producing nations to abide by these legislations. One method of job creation is JRL, which is the process of training and developing nationals with the appropriate education, competencies, and experience to enable companies to replace expatriates with nationals.

This paper presented an extensive review of existing literature on local content and localization in the O&G sector. Local content policies can stimulate local employment and economic growth. Within the realm of local content, there is a drive to increase local workforce participation within the industry. Whilst JRL can only have limited impact on national economies due to the low number of available jobs in the O&G sector, it remains a key aspect of local content strategies.

Effective JRL can have major benefits whilst addressing the values of governments, industry, and local people. However, O&G companies are unique in requiring very high technical standards of the workforce in order to avoid O&G catastrophes. This can be a highly significant barrier to JRL if people with the required competencies, skills and experience are not available within the local labor market. As O&G companies are increasingly encouraged to localize their workforces by host governments, it is important to understand how much localization can be achieved, whose responsibility it is to develop the local workforce, and whether it is economically viable to localize job roles.

There are significant opportunities for future research. For example, JRL in regions and countries such as the Middle East and China has been well researched. However, there have been limited studies in developing countries where the labor market is undersupplied. There are opportunities to replicate this study in other developing countries. Future studies that examine the effectiveness of JRL would be valuable. Furthermore, existing research has focused on the localization of managerial job roles. It would be valuable to investigate the localization of non-managerial positions as well.

The scope of this research did not touch upon issues such as increasing the participation of youth, women, locally affected communities or disadvantaged people in jobs. There would be scope for future studies to examine these areas.

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