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An Exploratory Study of Skills Shortages within the Oil and Gas Industry in Scotland

Nuria Camps
Oil and Gas Academy of Scotland, United Kingdom

Abstract:
The aim of this paper is to analyse the perceptions and awareness that school leavers and university students, aged between 14 and 25 in Dundee, have of the Scottish oil and gas industry in relation to skills shortage issues faced by the industry. A survey was carried out in one secondary school and one university in Dundee with a total of 145 respondents taking part in the survey. Findings indicate that school leavers and students have certain misperceptions of the Scottish oil and gas industry and hence more effort is required to communicate the attractiveness of the industry.

Paper type: Research paper

Keywords: Skills shortage, Scottish oil and gas industry, Perceived Career Attractiveness, Talent Trends, Human Capital Trends

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1. Introduction

A skills shortage for a number of positions in the Scottish oil & gas industry has been identified for a long time, with highly skilled project managers and engineers currently being in high demand. Continual developments in many areas of the industry over the years, for instance technology or increased cost reduction initiatives have helped to push the demand for a skilled workforce at a much faster pace than was originally anticipated. Some claim the industry today is unprepared and undermanned to deal with future workforce demand, adding to and increasing skill shortage issues (Knot 1996). A skilled workforce refers to employees who are fully trained to perform a specific job, being familiar with the necessary processes and being up to date with current techniques and technologies (Cogent Sector Skills Council, 2008, p 7). A skills shortage can occur when demand for experienced workers is higher than the labour market can provide (Training Agency 1990: 29). A situation that has developed in the Scottish oil & gas industry due to a large number of factors that, when combined over decades, has assisted in spreading a false and/or negative impression of the Scottish oil and gas industry. The industry is generally seen as one in decline and with no positive long term future. This has been largely accepted by the general public over the decades due to the widespread belief that many leading politicians, industry figures, top academics and the media have communicated. These mixed messages about the stability and the future of the industry over a period of time have reflected on it in a poor light. This negative picture has turned many people away from this industry when thinking of a career path. Not enough focus and importance has been given to the Scottish oil & gas industry and its future growth and the need to attract, educate and train young and new, talented people for future long term careers in the industry (Ewing 2013).

A skills shortage, if not tackled adequately, can lead to a number of serious issues for the industry. It has been seen for some time that the current skills shortage has pushed wages up in some areas of the industry, thus pushing overall operating costs up. Some companies now feel the only way to get suitably skilled workers is to poach employees from their competitors. This is usually done by offering higher salaries, better benefits and better working conditions. This method of recruitment is not sustainable and only increases operating costs, making the whole UK oil and gas industry less profitable and does not help to minimise any of the skills shortage issues. Skills shortage can also lead to many other serious issues for the industry such as production delays which increase the costs for the industry (Cogent Sector Skills Council, 2008, p 18).

The companies operating in the oil and gas industry today need to be more proactive in balancing their future long-term talent requirements with the current industry trend of project postponements, payroll freeze, wage reductions and redundancies which have all happened since the 2014 drop in oil prices. The current crisis seems to have a longitudinal nature; hence, if the industry players continue to have a short-sighted approach centred on cost cutting, the skills shortage and negative perceptions about unstable careers in the industry will contribute further to the misbalance in the labour market.

According to McGillivray and Norrie (2015), the continued skills shortage issue can be attributed to the failure to foresee demographic related issues. The reduction in hiring and retirement of skilled workforces could result in a further skills gap in the future (Johnson, 2015). Many companies do not prioritise long-term talent planning over the years; moreover, most short-term talent strategies have not been up to par, leading to skill shortages which manifest themselves in many ways, such as the inflated salaries, the overuse of third-party contractors and industry-wide poaching from rival companies. The skills crisis will likely worsen if the industry does not change its approach to recruiting and maintaining people (McGillivray and Norrie 2015).

The aim of this paper is to explore the perceptions of young people in Scotland, in Dundee in particular, with respect of the Scottish oil and gas industry. This paper is structured as follows. First, it discusses the issue of the skills crisis and it will then move on to examine the perception towards the industry based on available literature. Next, it will present the methodology of the study and its findings. Lastly, it will discuss the practical implications followed by the concluding remarks for the paper.

2. Impact of the skills shortage on the oil and gas industry in Scotland

The issue of skills shortage has challenged the Scottish oil and gas industry since the 1980s. Deteriorating infrastructure, regulatory pressures, challenging economics, depleting oil reserves and technical limits on further recovery (McGillivray and Norrie, 2015) have resulted in a major issue for the industry: recruiting and retaining highly skilled workers.

Highly specialised jobs are very much in demand in the oil and gas industry. Professions such as geoscientists, petroleum engineers, drillers and tool pushers, who perform specialised functions and technical tasks, require years of formal training and industry experience. Moreover, as the exploration and production of petroleum becomes increasingly challenging, the demands for certain skills and expertise – namely deepwater and unconventional – are on the rise (Hu et al., 2013; Solman, 2013; Society of Petroleum Engineers, 2012).These experienced oil and gas professionals are exceptionally well-paid in the boom times. However, massive layoffs have been announced across the industry on a global scale since the oil prices began to fall in late 2014 (Kemp, 2015; McGillivray and Norrie, 2015; Shauk, 2015).

The boom-bust cycle and periodic mass layoffs in the industry pose a challenge to retain competent labour forces. Kemp (2015) pointed out that there is an acute shortage of oil and gas professionals aged 35-45, with over 10 years of experience. Whilst the industry experts in their late 60s are entering retirement age, the recent graduates are often inexperienced and not suitable for supervisory roles. Such an uneven age profile in the oil and gas industry is mainly due to a previous industry downturn in the 1980's and 90's, when low oil prices resulted in redundancies and a hiring freeze (Kemp, 2015; McGillivray and Norrie, 2015; Shauk, 2015).

However, Ernst & Young (2014) revealed that only 10% of the workers in the industry are over 55 (the national average is 32%) and nearly half of the workers are aged between 25 and 45, suggesting that the uneven age profile of the Scottish oil and gas industry is not as significant as previously thought. Equally, the study of the UK Continental Shelf (UKCS) (2015) reported that the average age of the total offshore labour force was 40 years in 2014. The findings of Ernst & Young (2014) and UKCS (2015) dispel the perception that the workforce of the oil and gas industry is an ageing workforce.

The steep decline of crude revenues in late 2014 has recalled the industry-wide slump in the 1980s and 90s that spooked a generation of university students not to continue their studies in oil and gas (Shauk, 2015). Decades later, oil and gas companies are still trying to rebuild a long-term competent workforce and yet the fluctuating oil price continues to affect the workforce planning and talent management of the oil and gas companies (Kemp, 2015; McGillivray and Norrie, 2015; Shauk, 2015). However, larger firms recognise the challenges of maintaining a skilled labour force and thus continue their efforts in attracting young people to work in the oil and gas industry (Shauk, 2015). Smaller companies are also taking advantages of the massive layoffs by recruiting the experienced oil and gas professionals whom they were unable to hire during the boom times (Bank of Scotland, 2015).

The oil and gas industry is a high capital-intensive industry but its most scarce and essential resource is its workforce. As the Scottish oil and gas industry workforce is ageing, the skills gap will continue to widen in coming years. The Global recruiter survey claims 125,000 new members of staff will be needed over the next 10 years in the Scottish oil and gas industry (The Global Recruiter 2014).Recruiting, training and retaining workers within the industry is the challenge which most of the operators face today. The HR Consulting arm of Schlumberger has warned repeatedly about the looming talent shortage which it termed “the great crew change” (Schlumberger Business Consulting, 2015).

The workforce composition in oil and gas companies consists predominantly of experienced workers aged in their 40s and 50s and recently recruited young graduates. But there appears to be a severe shortage of mid-career workers aged 35 to 45 with 10 to 20 years of experience. This gap in skilled workers is due to the previous industry downturn in the 1980s and 90s, when low oil prices resulted in huge redundancies and a hiring freeze. The result of this is that now the number of workers who should be moving through the ranks at the mid-career level into supervisor and leader positions is smaller than it should be. The current low oil price has recently forced thousands of oil and gas workers out of work, budgets are being cut, pay frozen and cuts to contractors rates are being introduced, exploration and production of oil is down. This approach is remarkably reminiscent of the downturn in the 1980s when the industry lost a generation of new recruits and student graduates. That period was followed by low capacity rebuilding activity as stripped down companies struggled to flourish due to the skills shortage. The industry must not lose current graduates today to other sectors and therefore should aim to be seen as an attractive and long term career choice. Some of the larger operators are continuing to focus on marketing to young people via social

media, websites and campus visits (Kemp 2016) in order to compensate for the current downturn.

3. Skills shortage in the light of fluctuating oil price

Worldwide business has been affected by the drop in oil price, companies are now streamlining and projects have been stopped or put back in time and even cancelled altogether, while companies are revaluing recruitment plans. In recent years, with high oil prices there have been large increases to costs within the industry. When the oil price drops, shareholder pressure forces oil companies to cut costs in operations, which includes the workforce. This has been witnessed recently as several large companies announce redundancies. Should prices not recover in the short- to mid-term then it is expected that further companies will announce restructuring plans. The longer prices are below $70 a barrel, the deeper the cuts will be, with a continued recruitment freeze. That said, despite the uncertainty, companies have hiring plans in place that target the specialist skills needed for now and the future when growth returns.

Andrew Speers, managing director of Petroplan Global, says the falling price of crude will have more impact in countries with higher production costs (Johnson, 2015). Until now most of the workforce-related restructuring has been mainly in the more mature markets which have aging assets and marginal fields, like the UK North Sea and some US projects, which are also in danger due to oil price affecting viability. The sixth annual Hays oil and gas salary guide November 2014 showed that the skills shortage was once more the number one issue facing employers. Neil Gascoigne, global business development manager for Hays Oil & Gas, said that companies are still struggling to find highly skilled workers (Johnson, 2015), and if the question was asked today, skills shortage would remain a big concern. The skilled workforce relating to finding new assets are most at risk, those in geosciences and petrochemicals and they will both be hit hard as there will now be more focus on maximising revenue from existing wells rather than looking for new wells. Production assets should not experience the same degree of upheaval, as capital investment has already been made in these areas.

Andrew Spears says that cutbacks may be used by the industry to address employee issues (Johnson, 2015). The industry can take advantage of the austerity sweeping through it to deal with repeated recruitment issues, like the balance of contracts and full time employees. The rate for contractors has increased 3 times more than staff wages in the past 5 years and it could therefore make more sense if companies hired contractors as employees. Gascoigne noted that the long awaited loss of knowledge the industry would suffer as senior staff and engineers retire is only made worse by the current situation. A reduction in hiring now makes the skills gap worse and could lead to more skills shortages in future. A reduced hiring of the younger generation could now create a future skills gap, much like it did in the late 1980s, says Gascoigne. Mr Spears notes that the UK oil and gas sector has been one of the areas hit hardest by the current oil price drop, with many companies reducing staff in this last year. This type of reaction to short term problems is part of a general trend.

Continuous redundancy can result in talent pipeline issues. Some oil and gas companies are doing their best to secure jobs and keep a skilled workforce now, but the message being sent out to potential future industry workers is not one of an industry with a bright future. There is a risk that skilled workers will leave the UK industry for jobs overseas. After the previous industry downturn, skills shortages issues created by the industry itself saw companies crying out for the people they had laid off only a few months previously. Although the near future looks unsettled, opportunities still remain for those willing to be flexible (Johnson 2015).

The UK wide oil and gas industry report reveals that of the 101 companies who took part in the survey, 92% of those companies questioned had plans for growth over the next 2 years. 39% claim falling oil prices has delayed some investments. 91% are looking to expand internationally. 25% of companies are exploring merger options in order to gain a stronger market position. The survey reveals that falling oil prices and rising production costs is having a great impact on companies. The industry has worked through troubles in the past and companies continue to strive for growth in these challenging times, diversification and job growth are seen as a solution to help growth within the industry over the next 2 years. Decommissioning activity has increased 38% in the last year. Almost half (49%) of respondents show interest for diversification into renewables and shale and around 73% are expecting their company head count to increase over the next 2 years (Bank of Scotland, 2015).

Skills shortage adds to the globalisation of the workforce, creating opportunity but also creating problems for Scottish based oil and gas supply chain companies. Having to compete for human resources against growing global demand, some companies choose to headhunt key staff by offering increased salaries, with the aim of attracting competitors' employees instead of fully training new entry level employees. This short term solution leads to increased cost of operating across the whole Scottish oil and gas industry. Skills shortage also leads to the increased use of sub-contractors within the supply chain. Some jobs require a highly skilled workforce and are typically covered by sub-contractors. Sub-contractors are also in a similar situation in that they are often looking to recruit due to increasing demand. This situation does not allow for the training and skills development of new people as they are searching for labour from the same pool of workers. This is also giving limited status to the worker / sub-contractor within the oil company itself.

If skills shortage is not tackled it can lead to a number of potentially industry damaging results. As wages increase they impact negatively on the overall development and viability of projects. The industry at present seems unable to encourage the next generation of workers to join the industry (HM Government 2013).

4. Responding skills shortage: industry approach

When business is slow the industry tends to cut back staff and when things are good it seems that they cannot employ enough skilled workers. A more consistent level of employee numbers is desired, a higher commitment during tougher times should help

employee availability during busy times, thus avoiding a skills gap. Not having enough skilled workers to carry out planned and future work is seen as one of the largest challenges facing the industry today. Larger companies do not report a shortage of apprentices or graduates wishing to join them, it is the smaller ones who report there is a lack of high calibre people (HM Government 2013).

Businesses are now reporting increased numbers of females wishing to join them, this shows that the industry is now looking to the wider population to meet its growing needs, resulting in a future workforce that is talented and diverse (Gourtsoyannis 2012).

The Scottish oil and gas industry is in competition on the worldwide market for hiring the very best talent available. This means offering the best wages and benefits plus good workings conditions. This will contribute to the continued flow of high quality employees across the whole industry, which is needed to meet the targeted increased production and the further development of the UK supply chain sector (HM Government 2013).

CNR International, an Aberdeen based company, believes the way to overcome skills shortage is to develop staff from within the company. The company has a graduate scheme combining technical workshops and mentoring from experienced senior employees from within the company, achieving transitional knowledge (Bates 2014). Some companies are looking south for skilled staff, as in the case of Bibby Offshore who, forced by lack of suitably trained employees locally, moved from Aberdeen to Newcastle (Askeland 2014).

Other areas of the country are trying to attract Aberdeen-based companies looking for room to expand, including the Orkney Islands Council and Highlands and Islands Enterprise, who are aiming to promote their areas for oil & gas investors (Crighton 1998). The Rail Maritime and Transport Workers Union claims the problem will not be solved by moving operations around the country as the root of the issue remains the same that the industry is not investing in people.

5. Responding to skills shortage: academic approach

Offshore Petroleum Industry Training Organization (OPITO) has developed a transformation training program which aims to take people with relevant experience from other backgrounds and put them through a 12 week retraining programme funded by Skills Development Scotland. They are working with Ministry of Defence employees being made redundant from Royal Air Force Kinloss and Lossiemouth (Gourtsoyannis 2012). OPITO is also seeking further support from the Scottish Government for transition training to be added as part of the further education curriculum (Gourtsoyannis 2012). There remains much work still to be done, but these actions may help to reduce the skills gap, increasing awareness of the industry and introducing people with transferable skills to the oil and gas industry.

6. Image of the industry

The image of oil and gas industry has remained negative for five decades. In the 1970s it was said "the oil will not last", in the 80s they said "it was almost over", in the 1990s the talk was all about peak oil. Going back to the 1970s, it was widely accepted that the industry would be winding down now in 2010s and yet more recently, some experts predict that the North Sea will still be producing beyond 2050 (The Economist 2012). These mixed messages as outlined by the UK government, the media and the industry itself, have built a negative or perhaps pessimistic perception towards the oil and gas industry (Ewing 2013). In 2014, the UK Prime Minister, David Cameron, used the term "dwindling North Sea oil" in describing the UK oil and gas industry (The Globe and Mail 2014).Such description creates an overall impression that the industry is declining and has no future growth. This in turn leads to a perception that a career in the oil and gas industry as an unattractive career choice.

The millennial generation who were born between 1980 and 2000 expect interesting careers and they are willing to change their career or move to another organisation if their expectations are not being met (Lyons, et al., 2012; PwC, 2011; Pfeffer, 2013). The hostile working conditions of the oil and gas industry as well as job redundancies in the industry due to the fluctuation in oil price (Kemp, 2015; McGillivray and Norrie, 2015; Shauk, 2015) are particularly unappealing to the millennial generation. Moreover, as output from oil reserves is in long-term global decline and alternate energy sources becomes more widely used, the job prospects of young workers in the oil and gas industry for the next 50 years becomes unclear.

However, there have been many changes recently in the oil and gas industry. Many fuel-dependent companies are diversifying into renewable energy (Bank of Scotland, 2015) and some major industry players made a pledge to limit climate change (Werber, 2015). Such changes reflect the willingness and commitment of oil and gas companies to experiment with new methods and incorporate changes into their businesses.

7. Methodology

This study uses questionnaires in order to ascertain the perceptions and attitudes of students in Dundee on careers in the oil and gas industry. In total a sample of 145 students were approached to participate in the research. Each student from Dundee High School and The University of Abertay, Dundee, was asked to fill a hard copy of the questionnaire. Each questionnaire had a brief explanation on how to answer it and outlined assurance that confidentiality is guaranteed. Research was carried out from June to August 2014. Data obtained was analysed using descriptive statistics.

The questionnaire was divided into five main sections. The first section aimed to collect demographic data, including gender, age group, subject/degree studied and where students were studying. The second section had questions related to attitudes, where participants were asked if they would work for the energy sector, giving them the option

to respond with a closed yes/no answer. Following this, participants were asked to write why they would or would not work for the energy industry. Sections 3, 4 and 5 were designed to ascertain the knowledge and perceptions of participants of the energy industry. In total, 20 statements, using the Likert scale, were designed, where participants could answer each statement with strongly agree, agree, neutral, disagree and strongly disagree. The third section was about knowledge of the industry, with a total of 9 statements. This section intended to find out the knowledge and perceptions students had about the energy industry; the statements were designed to test the knowledge of some myths or misinterpretation of facts within the industry. The fourth section of the questionnaire was about personal experiences, with a total of 4 statements and the fifth section concerned knowledge of elements in the energy industry with a total of 7 statements.

8. The main findings

Findings show that respondents were not fully aware of the opportunities in the oil and gas industry as a whole. 88% of participants responded that they had not received enough information from school. 83% did not understand the career path to access the oil and gas Industry as clear. 60% of the respondents were not aware of the career opportunities in the industry and had little or no information about the industry. These findings show that there is a lack of awareness about the oil and gas industry. It also appears that the education institutions are not providing sufficient information about working in the oil and gas industry as part of their career advice for school leavers. There is a need to promote awareness among pupils especially those aged between 15 and 17 so that they will be well-informed about career choices within the industry.

The oil and gas industry is a male dominated industry. This is reflected in the survey where female respondents generally lack interest to work in the industry. Results reveal that only 3% of female pupils would be interested in working in the oil and gas industry and only16% of female university students expressed an interest in working in the industry. Furthermore, the female respondents typically lack understanding about the industry and perceive the industry as boring and not rewarding. This finding indicates that female participation in the industry is not optimistic, considering the lack of interest among the girls.

40% of the participants agreed with the statement in the survey that “most available jobs in oil and gas industry are for engineers and technicians”. This suggests that the respondents had little knowledge about the available jobs in the industry and thus more career information should be given to students during their education.

Findings shows that 73% of those questioned think that the oil and gas industry has a long future ahead. This may be due to the fact that participants are aware of the current need for fossil fuel. This finding is in contrast to the general perception that the oil and gas industry is a mature and declining industry with little job prospects. However, 44% of the participants perceived the industry as dirty, heavily polluted, and having a bad reputation. A further 35% answered they were unsure, suggesting a lack of understanding. This finding implies that the youth generally have little or no knowledge

about the oil and gas industry and, more importantly, the industry appears to be unattractive to them.

61% of the respondents were unaware that salaries of oil and gas professionals are generally higher compared to other industries. 26.8% said that they would consider working in the oil and gas industry. Of those who said they would choose to work in the oil and gas industry, 67% of them stated that higher salaries and benefits are what mainly attracts them to the industry.

Only 21% of the participants were aware of the skills shortage in the industry, indicating that majority of the participants (79%) were unaware of the skills crisis. This is partly due to the inadequate information they receive at school, which leads to little knowledge of the industry. In relation to that, pupils typically view the oil and gas industry as dull, uninspiring, and unexciting. The majority of respondents have never thought about working in the oil and gas industry. Furthermore, some students do not think that their skills are transferable to the petroleum industry. In particular, university students who enrolled in computing and gaming programmes perceive their subjects as being irrelevant to the professions in the oil and gas industry.

9. Practical implications

The UK Government has developed an intensive strategy aiming to support a functional partnership with the oil and gas industry (HM Government, 2013). One of the specific actions of this partnership is about supporting the industry in skills development to meet the current and future demands for a skilled workforce. However, whilst the aims for the industry-government partnership are set, there is a need for the partnership to work within the academic environment to stimulate student demand for engineering careers. Another under-looked area requiring attention relates to gender diversity in the industry, especially in the context of women's participation in science, technology, engineering and mathematics (STEM) subjects.

More attention needs to be dedicated to awareness of the industry as being a good place for a future career. The current perception of the industry as having an unsustainable future and facing the end of its life is ungrounded, as it's expected that the industry will continue to supply oil and gas well beyond 2055. Therefore, this perception requires a positive change to avoid compounding the skills shortage.

Finally, it has to be noted that the industry is also associated with the view that it opposes the progress towards a greener UK economy. Government needs to communicate it clearer that the some fossil fuels (e.g. gas) are to be an essential part of the energy mix.

On the other hand, industry participation should take a more active approach and have long-term HR planning strategies in place in order to ensure that the necessary talent is available. In the past, industry players have mainly adopted a reactive approach when faced with skills shortages (Johnson 2015). Another avenue needs to be considered that

offers more opportunities for apprenticeship as this can be beneficial in dealing with current and future skills shortages in the industry and at company level.

10. Conclusion

This study revolves around the skills shortage in the Scottish oil and gas industry. The aim of this paper is to examine the issue of the skills shortage in the Scottish oil and gas industry as well as the perception of young people towards the industry. The key findings indicate that there is a gap of knowledge of the industry by the general population on the whole and this is particularly evident among the young people. Participants are generally unaware of the career opportunities in the oil and gas industry and they have little knowledge regarding available job positions in the industry. Young people are less attracted to work in the oil and gas industry and they see the industry as dirty, boring, and not fun at all. The majority of the respondents were unaware of the skills crisis in the industry and the salary level of oil and gas professionals. There is also a lack of interest among females in working in the industry since oil and gas industry is seen as a male dominated industry.

The main limitation of this research is its cross-sectional nature, that is, the data were collected at one point in time. Therefore, longitudinal research would indicate changes of perception or indifference regarding the industry over the years. Nevertheless, this research presented a number of primary data, which drew an initial picture of the perception of the youth towards the oil and gas industry, stressing the need for further research. Future research could look at the gender diversity gap in the industry as well as effectiveness of the government initiatives to promote careers in the petroleum industry.

A number of issues were raised and the need for change was stressed. First, there is a need for cooperation between the government and industry in order to improve the image of the industry. The general public, and young people in particular, need to be better informed about the industry, especially regarding the career opportunities in the industry. At institutional level, career advisers and career services at university could invite oil and gas professionals for guest speeches or to job fairs so that the young people could have opportunities for social interactions with industry experts.

Second, the government should put greater focus on encouraging young people to embark on a career in engineering, especially in the context of women's participation. Women in engineering careers remain scarce and thus promoting women's participation in the petroleum industry requires a more inclusive approach.

And, last but not least, there is a need for more research for the better understanding of the work attitude and expectations of young people to work in the petroleum industry at regional and national level.

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