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Onshore Skilled Migrant Engineers: Skills Wastage and Atrophy*

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Abstract

This article reports the survey findings from a research project exploring the use of skilled migration as a strategy for assisting in overcoming the pressing risks facing the Australian rail industry in workforce development. These risks are associated with an ageing workforce and skill shortages in engineering and technical areas. The data presented originate from a survey of skilled migrants in an employment program for skilled migrants in the Sydney metropolitan area and skilled migrant engineers in Victoria. The findings point to the potential, and yet untapped source of highly qualified professionals who could be targeted for recruitment by the rail industry. Of greater significance are the broader implications of the research in terms of engineering skills wastage and atrophy in a time when Australia cannot produce enough engineering professionals domestically to meet the demand. This is all set against a backdrop of global engineering shortages and fierce domestic competition for engineering skills made even more prominent with the second wave of the resources boom.

1. Introduction

The Australian rail industry, like many other related industries is experiencing skill shortages in mission-critical skill sets related to engineering and technical skills. These skills shortages are not only national but global and this situation is compounded by the fact that the profession is ageing. Engineers Australia (EA) estimates 70,000 retirements in the profession now and into the next five years (Engineers Australia 2009). Australia has not been able to meet the demand for engineers domestically through Australian universities for

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some time, and has long relied on skilled migration to meet the demand for engineers. Yet, the rates of unemployment for overseas-born engineers are higher than that of Australian-born engineers:

> Reliance on engineers born and trained overseas is not a recent phenomenon and has been a feature of the Australian labour market for many years. The unemployment rate for overseas born people (4.3 per cent) in the engineering labour force was higher than for Australian born people (1.8 per cent). The labour market experience of overseas-born engineers is related to how long they have been in Australia (Kaspura 2011, p. 6).

The aim of this article is to explore the pool of available migrant engineering talent that is already onshore due to independent general skilled-migration entry to Australia. The article reports findings from two surveys conducted on samples of onshore highly skilled migrants. The surveys explored a set of demographics, employment, and workforce-participation issues along with attractors and career impacts since respondents migrated to Australia. The findings in the study point to a significant disconnect between the rhetoric of skilled-migration policy and the reality for many independent skilled migrants, once they enter Australia. Independent skilled migrants can only apply to migrate to Australia if their occupation is on the Skilled Occupations List (SOL) and they pass a points test. The majority of the survey respondents reported in this study entered Australia as permanent residents which indicates that they were independent skilled migrants under the points-based General Skilled Migration program. According to the Department of Immigration and Citizenship 36,167 skilled independent migrants were processed in 2010–11 and in 2011–12 this increased to 37,772 (DIAC 2012, p. 10). Independent skilled migrants who are points-tested and apply from outside Australia have an unemployment rate of 6.3 per cent and this rate tends to be greater than the Australian average (DIAC 2011, p. 5). The findings of the research highlight a paradoxical situation where, on the one hand, we are suffering from engineering skill shortages nationally, and yet there are highly skilled migrant engineers suffering from skills wastage and atrophy, as indicated by the unemployment rates in the profession and the number of overseas-born engineers not working in engineering occupations (Kaspura 2011).

In pure human capital terms, this is not economically rational and has profound implications for future independent highly skilled migrants wanting to come to Australia. As noted by the OECD (2012, p. 22), 'the skills of migrants are not being tapped to their full potential ... even though competition between destination countries to attract and retain talent is

gathering pace'. The OECD (2012, p. 14) suggests that destination countries need to invest in language training in order to facilitate mobility and skills transfer, as well as pre-departure training to familiarise immigrants with labour market requirements. The work of bodies such as Adult Migrant English Service (AMES) and EA who are conducting different programs and implementing different strategies to assist onshore migrant engineers to enter the profession in Australia is testament to a suite of strategies which could be employed to assist these skilled migrants to overcome professional employment barriers. In terms of the rail industry, the Australian National Engineering Taskforce (ANET) report on engineering skills capacity in roads and rail concluded:

> The causes of the acute skills shortage and the impediments to resolving the capacity crisis are largely structural, and beyond the control of individual organisations: they are rooted in the nature and patterns of demand set by governments, the complex market structure, and rail safety legislation which apportions risk. (Wise et al. 2011, p. 102).

The theoretical base of this article is drawn from human capital theory. Human capital in the human resource literature is seen as a critical source of competitive advantage. The OECD (2001, p. 18) defines human capital as 'the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being'. The accumulation of human capital is acquired knowledge and skills through education and training, and the measurement of human capital is an important source of evidence for developing and implementing policies regarding human resources. Human capital theory can be applied to individual, organisational, and national levels of analysis. The national measurement of skill shortages and resulting policies on skilled migration are a prime example of how human capital theory can be applied and implemented at a national level.

An example of how this is used for analysing competitive advantage in the field of strategic human resource management (HRM) is the work of Lepak and Snell (1999). They drew upon three theoretical bases (transaction cost economics, human capital theory, and the resource-based view) to develop what they term as the human resource architecture. Key to this architecture is the strategic value of human capital and the uniqueness of human capital. The strategic value of human capital is 'inherently dependent upon its potential to contribute to the competitive advantage or core competence of the firm' (Lepak and Snell 1999, p. 35). The uniqueness of human capital 'refers to the degree to which it is rare, specialised and in the extreme, firm specific (Lepak and Snell 2002, p. 519). Both increase the competitive

advantage of the firm. Independent skilled migrants are able to come to Australia based on the demand for certain human capital (skilled occupations and professionals). Australia, as a traditional migration nation is also in competition with other migration nations for scarce and in-demand human capital. It is in the nation's interest to ensure it develops and enacts skilled-migration policy and programs that sustain an advantage in attracting and retaining skilled migrants. Skills wastage and atrophy of onshore skilled migrants is a symptom of problems in the operationalisation of skilled-migration policy; however, it is also strongly influenced by contextual forces.

This article discusses engineering skill shortages before exploring the policy terrain around skilled migration and the shift to a demand-driven system where the onus is now on employers to deal with skill shortages through temporary skilled migration (457 visas) and regional, state, and territory-sponsored or employer-sponsored migration programs. The article then explores the impacts of engineering skill shortages on the Australian rail industry and the issues of skills wastage and atrophy, before presenting the results from the two surveys. The article presents the findings and its broader implications before concluding with recommendations and areas for future research.

2. Engineering Skill Shortages

Shortages in key skill areas are greatly affecting many industries' ability to meet current and future workforce demands. Despite the labour market effects of the recent global financial crisis and a slowing in the growth pace of the latest resources boom, certain engineering, project management, and technical and trade skill shortages remain critical for the rail industry and the Australian economy in general. Causes of skill shortages are multiple and operate across a variety of spheres (economic climate; industry growth; ageing workforce; education and training system factors; industry structure, image, and culture). The demand and supply of skilled labour further complicates the issues. The domestic education and training system is not producing the number of engineering and technical skilled employees to meet the current demands of an Australian economy buoyed by large infrastructure projects and a renewed resources boom (APESMA 2010). The latter further compounds the issues for the Australian rail industry, which is the focus of this research.

Major engineering professional bodies (EA and the Association of Professional Engineers, Scientific, and Managers Australia) have long been aware of the acute engineering skill shortages and the impact of increased economic activity in competing industries. There are currently 23 engineering

occupations of the SOL and this represents a large array of engineering specialisations (for example chemical, structural, electrical, electronics, biomedical, petroleum, mechanical, civil, transport, and environmental). EA has asserted that a

> continued lack of investment and renewal in the rail sector with fluctuating job opportunities, combined with more generalised engineering skill shortages across the economy, a falling number of school students with the capabilities to study engineering, and stagnated engineering graduations have all combined to exacerbate engineering shortages in the rail industry (2009, p. 3).

EA examined Australian census data from 2001 and 2006 and conservatively estimated that by the year 2011, there would be up to 70,000 retirements from the engineering profession in Australia and that there would be only be 45,000 Australian graduates that will have completed their engineering study during that same period (EA 2009).

Migrant engineers represent more than half of the growth of new entrants to the Australian engineering profession each year. Since 2003–04, the number of migrant engineers working in Australia under temporary skilled-migration visas has doubled. EA duly recognises the 'significant contribution made by migrant engineers to Australia's competiveness and economic growth. Migrant engineers are a vital element in generating new ideas and approaches to engineering, and for providing skills where there are shortages' (EA 2009, p. 6).

A statistical overview of the engineering profession undertaken by Kaspura (2011) on behalf of EA estimated that in 2011 there were 249,785 people in the engineering labour force with an unemployment rate of 2.9 per cent (compared to 5.2 per cent in the economy). Statistics from the 2006 census reported that 140,312 (46 per cent) of the engineering population in Australia were born overseas. Unemployment rates for overseas-born engineers falls the longer they are in Australia; however, unemployment rates for the most recent arrivals are above the average in the general labour force. Another striking statistic relates to those in the engineering labour force who are employed in the engineering profession. Only 50 per cent of the overseas-born engineers in the 2006 census were employed in engineering occupations and, for those overseas born engineers who have recently arrived in Australia, only 46 per cent were employed in the engineering occupation while 53.3 per cent were employed in non-engineering occupations or were unemployed (Kaspura 2011, pp. 9-10).

> Skill shortages occur when the supply of skills in a particular profession or area is outstripped by demand from industry. Skill shortages typically effect [sic] segments of industry relying on specialist or experienced workers ... There is a well recognized skills shortage in engineering, affecting both generic engineering skills and also concentrated in areas of specialisation. The shortages effect [sic] industry unevenly, particularly in areas like rail engineering, where signal engineers are an aging specialist workforce in crucially short supply (Pearce, Flavell and Dao-Cheng 2010, p. 9).

The impacts on these industry-specific skill shortages for the Australian rail industry are significant and create a set of crucial workforce risks for the present and the future.

The article now turns to a discussion of the policy shifts in recent Australian migration policy as a prelude to a discussion on the use of skilled migration as a workforce-development strategy for rail.

3. A Demand-driven Skilled-migration Policy Shift

Since the 1980s, the Australian government has developed policies designed to target migrants with experience in areas where there is a skill shortfall through its General Skilled Migration program. There are a variety of options for potential migrants to apply for migration under the General Skilled Migration program. This depends on whether the applicant is applying for an onshore visa (applying from within Australia), or an offshore visa (applying from outside Australia). There is a range of visa options under the General Skilled Migration program for skilled workers who want to live in Australia and who do not have an employer sponsoring them. These include options for skilled people applying as independent migrants as well as those sponsored by a relative, or nominated by a State or Territory government. Australia's 2011–12 skilled-migration program focussed on skilled migrants to help to fill critical skill needs, particularly in regional areas. The program targeted the following visa pathways:

- Regional Sponsored Migration Scheme (RSMS);
- Employer Nomination Scheme (ENS);
- State or Territory government sponsored categories; and
- The independent skilled categories where priority was given to occupations on the Skilled Occupations List (SOL) (DIAC 2012, p. 6).

Since the mid 1990s, Australian migration policy has become a demand-driven system which is achieved first 'by giving greater weight in the points test to applicants whose skills were in demand from employers. Second, employers have been given, subject to certain eligibility conditions, the ability to themselves select migrants through employer sponsorship, for either permanent or temporary residence' (Cully et al. 2011, p. 4). This has seen a shift away from 'independent skilled migrants, who do not have employment arranged in Australia prior to migrating here, towards sponsored skilled migrants, who have arranged employment prior to their arrival ... the need for a shift in focus away from "supply driven" independent skilled migration towards "demand-driven" outcomes, in the form of employer and governmentÐsponsored skilled migration' (Phillips and Spinks 2012, p. 4).

The DIAC (2012) publication on the migration program for 2011–12 reported that the skilled stream of migration accounted for 68 per cent of the total migration program and professionals represented 61 per cent of the skill stream. The General Skilled Migration program represented 57.1 per cent of the skilled stream, and the state-specific and regional migration stream represented 38 per cent of the skilled stream. Family stream migration made up 31.7 per cent of the total migration program (DIAC 2012, p. 3). The largest source country of migrants in 2011–12 was India representing 15.7 per cent of the total migration program. The top 10 source countries for that same period were India, China, and the United Kingdom, followed by: the Philippines, South Africa, Sri Lanka, Malaysia, the Irish Republic, South Korea, and Vietnam.

The use of skilled migration as a means of combating workforce risks for the rail industry and, in particular, engineering skills shortages was the focus of this research.

4. Skilled Migration as a Strategy to Deal with Rail Industry Engineering Skill Shortages

Skill shortages in mission-critical skill sets are profoundly affecting the Australian rail industry's ability to perform well in a period of economic recovery marked by significant infrastructure expansion. Certain engineering, and technical and trade skill shortages remain critical for rail and the Australian economy in general. The rail industry faces a complex environment where not only is there a dwindling supply of skilled labour in these key areas, but the rail industry is also in competition domestically with other industries including mining, electricity, water, gas, and construction for these groups of highly sought skill sets. The increasing global competition for highly skilled labour adds another dimension of complexity to this situation as 'competition

for rail engineers is global, with a number of large rail construction projects in Asia and Europe draining Australian capacity' according to Pearce, Flavell and Dao-Cheng (2010, p. 11).

In 2007, the Australasian Railway Association (ARA) published the *Changing Face of Rail (*ARA 2007) and this was followed by another significant report: *A Rail Revolution* (ARA 2008). Both of these reports identified specific skill shortages within the rail industry. The Changing Face of Rail (ARA 2007) analysed employment trends in the Australasian rail industry and concluded that industry expansion was not supported by a strategy to enable workforce capacity to deliver adequate skill sets required for this expansion. The report also found that outsourcing has tended to attract staff away from core operators in times of constrained supply of skilled labour, and that age was an important factor in the workforce profile. The following key points were made.

- The problem of an ageing workforce is felt more acutely in rail, since the average age of employees in the industry is relatively higher than in the general workforce population (the age profile of the industry resembles an inverse bell curve);
- Core rail occupations are badly affected by ageing, and are the subject of offshore 'poaching' (ARA 2007, p. 2).

The Rail Revolution (ARA 2008) report undertook extensive labour market analysis and forecast trends in labour force needs that have never been experienced before in the Australian rail industry. The greatest need for specific skills sets is across the engineer job family, in addition to the trades and trades-equivalent job family. The report estimated that rail will need to access the following numbers of key skill sets for the next five years to meet demand and cover loss through age retirement.

- 250-340 engineers every year for the next five years (41 per cent loss of the current workforce over the next 5 years);
- 500-700 trades people every year for the next five years (40 per cent loss over the next 5 years due to retirements and separations);
- 420-700 operations staff every year for the next five years (ARA 2008, p. 9).

In addition to these workforce issues facing rail, the labour demand of the Australian resources sector is impacting on other industries. The competition for highly skilled labour domestically and internationally provides even greater impetus for the Australian rail industry to develop strategies to combat the skill shortages being experienced now and in the future. Skilled migration

is one such strategy, and the effective use of temporary skilled migration (457 visas), employer-nominated, and RSMS, and onshore recruitment of skilled migrants, are becoming a more popular source of labour supply for the rail industry (Cameron et al. 2011).

The ANET was set up in 2009 to deal with engineering skills shortages and has published reports on the research that the taskforce conducted and commissioned. In 2010, ANET commissioned research into the engineering skills capacity in the road and rail industries. The report made several recommendations in relation to the engineering labour supply, workplace learning, education and training, and skill utilisation. The profile of the rail and road engineering workforce represents 4 per cent of the total engineering workforce in Australia and they are mostly male, working full-time, are highly educated and well-paid. The workforce is, in the main, Australian-born; however, the majority of those with post graduate qualifications are overseas-born. Based on 2006 census data, 10 per cent of the rail engineering workforce is made up of overseas engineers who arrived in Australia in the five years to 2006 (Wise et al. 2011, p. ii). In relation to the rail industry, the report reviewed the structural drivers for the shortage of rail engineers and found that, historically, there had been an expansion of the rail workforce up to the 1980s which was followed by severe downsizing and reduced recruitment from the mid 1980s to the late 1990s. As a result of this, the rail workforce is ageing. Currently, the rail industry is experiencing 'a massive increase in the demand for rail infrastructure, both passenger and freight. The current resurgence in rail investment takes place at a time when the demand for engineering skills in other sectors is high' (Wise et al. 2011, p. 31).

The Australian economy and many industries reliant on engineering skill sets can ill afford to have engineering skills wastage and atrophy. In addition to this, if skilled migration is one strategy to combat these workforce risks, then recruiting from a pool of onshore skilled migrants will be a much more cost-effective option than offshore recruitment, which involves relocation and settlement costs and often takes months before the applicant actually starts work. Another advantage in recruiting from a pool of onshore skilled migrant talent is that it is highly likely that this group has been in Australia for some time and will have had more opportunities to adapt and integrate into the social and cultural aspects of Australian society. Their motivation to reside in Australia is considered to be strongly established owing to their personal decisions to migrate to Australia as independent self-funded skilled migrants.

5. Skills Wastage and Atrophy

The OECD has undertaken research into the over-qualification rates of immigrants 'there is not only under-utilisation of the human capital of immigrants, but also insufficient recognition of their qualifications, even though immigration countries are actively seeking skilled labour ... in the 23 OECD countries for which data are available, 36 per cent of immigrants with a university degree hold low or medium-skilled jobs' (OECD 2012, p.13). The implications for those not in jobs that are not commensurate with their skills will 'run the risk of incurring a long-lasting loss of human capital' (OECD 2012, p. 14).

Shah and Burke (2005) analysed the occupational mobility of permanent immigrants in Australia and observed, as other previous research had found, an initial downward occupational mobility among immigrants:

> The consequence of this is wastage of skills which the country can least afford in times of reported skills shortages. Skills wastage can be minimised by making available to newly arrived immigrants appropriate programmes for recognising previously acquired qualifications and occupational licenses; updating occupation-specific skills; and providing up-to-date information on the labour market and its operation (p. 1).

Constable et al. (2004, p. 35-6) examined the erosion of skills caused by an inability to utilise skills which results in skills wastage in the Australian labour market:

> Skills atrophy occurs as a result of non-utilisation of skills over a period of time. Non-utilisation of skills may occur as a result of non-recognition of qualifications, which leads to difficulties in gaining employment in a particular field. Although ... non-recognition of qualifications is a major barrier for those seeking employment in a particular field, even if recognition is conferred, access to employment is still difficult. The longer someone is out of the workforce or not practising in their field, loss of specialised skills, and the associated confidence in being able to perform particular kinds of work is experienced.

A key issue that affects skilled migrants when they arrive in Australia is that they are not familiar with the local employment context, including language. 'Therefore they are unable to describe or "translate" their skills, abilities and experiences in ways that make them more apparent to employers.

Further, often recruiters, employment network agencies and job seekers overlook the option of skills transfer which would increase the job seekers' employment options' (Constable et al. 2004, p. 11). The potential economic loss which results from skills wastage and atrophy is increasingly seen as a critical issue in an era of growing mobility of labour between nations, and the rise of multinational business and education (McAlister 1995, p. 441).

Wagner (2006) studied the difficulties of professional migrants from culturally and linguistically diverse (CALD) countries to gain skills recognition and employment at the level of their qualifications. The study examined the outcomes of a pilot program referred to as the Skills and Experience Assessment and Development (SEAD) program to assist 15 CALD engineers. The 12-week SEAD program assisted these engineers' transition into the Australian labour market through portfolio development, contact with professional bodies and academics, and work placements (Wagner 2006, p. 158). The pilot encouraged professional development based on recognition rather than an assumed deficit to counteract a perception of racism where skills recognition was applied negatively to certain groups.

Misko (2012) has recently undertaken research on the role of qualifications in the labour mobility of foreign workers in Australia, especially those without employer sponsorship. While the focus of her research was the role of qualifications, the research also found that other factors played a significant role in the labour market integration of onshore foreign workers in Australia. These included employer behaviour or discrimination. This is usually disguised under recruitment considerations about relevant experience (local experience) and 'good cultural fit', with employers and commercial recruiters preferring to employ those from other Anglophone countries such as the United States, Canada, New Zealand, the United Kingdom, and the Irish Republic (Misko 2012, p. 28).

The pool of skilled migrants who arrived in Australia independently (not state, regionally or employer-sponsored) represent a potential pool of skilled labour that could be utilised by the Australian rail industry. This potential pool may need some specialised training and bridging activities to combat the barriers associated with skills atrophy. These activities would equate to some investment in workforce orientation and transitional training into the Australian workforce and it may take a longer time for the new recruits to reach a point of productivity. Nonetheless, it is in times of critical skills shortages that these investments will create large returns on investment. This aspect of the research project aimed to explore the experiences of onshore skilled migrants suffering from skills wastage and atrophy due to their inability to overcome professional employment barriers to entering their profession in Australia. The research questions driving this phase of the research were:

RQ1: What potential pools of onshore skilled-migration talent currently exist?

RQ2: How can the rail industry take advantage of these potential migrants for recruitment purposes?

6. Methodology

The research design employed for the full study was exploratory and utilised a mixture of qualitative and quantitative data-collection methods across three sequential phases. The results from the first two phases of the research determined the focus and direction of the third phase and, to this extent, the research process was emergent. The first phase involved a Skilled Migration Forum which brought together members of the rail industry and key stakeholders. The second phase was focussed on offshore skilled migration and collected qualitative data from rail staff involved in offshore recruitment and skilled migrants working in rail. This form of recruitment was almost solely undertaken through the use of *Temporary Business (long stay) Visa 457.* Data from the first two phases of the larger study are not being presented in this article.

The data being reported in this article derive from the third phase of the larger study which focussed on onshore skilled migrants. These skilled migrants came to Australia through the General Skilled Migration program and would have done this independently or, in other words, they were not sponsored by an employer as is the case with the 457 visa, the RSMS, or other ENS visas. This phase of the research involved the collection of quantitative data through the administration of two surveys. The first survey was distributed in hard-copy format to participants of an employment program for skilled migrants run by the AMES in Sydney. The second was an online survey of skilled migrant engineers who were members of EA Victoria. The first survey is referred to hereafter as the AMES survey and the second is referred to as the EA survey. For construct and validation of the survey instruments used in the study, the researchers conducted an initial review of the literature to identify pre-existing tools. The instruments were reviewed by the expert researchers for content validity, and minor changes were made to clarify responses. The sampling technique applied to both surveys was non-probability convenience sampling. Accessibility to the samples was undertaken through negotiations with both organisations (AMES and EA). This allowed the researchers access to representative samples of onshore skilled migrants.

Survey samples

The AMES NSW is a government-funded organisation which conducts a suite of services for migrants, refugees, and humanitarian entrants to Australia. The organisation is based in metropolitan areas in Sydney. Negotiations

were made with AMES NSW to conduct the quantitative survey of skilled migrants who were participants of the *Skillmax* program. The *Skillmax* program assists overseas-qualified professionals with job-seeking and career-management skills and is free for eligible participants. To be eligible for the *Skillmax* program, participants are required to meet the following criteria:

- have overseas qualifications;
- are seeking work in their field of expertise;
- are Permanent Residents of Australia;
- have an International English language Testing System (IELTS) score of 6.5 or equivalent.

The *Skillmax* program is aimed at people who have overseas qualifications, skills, and training and are either unemployed or are not currently employed in the area of their expertise. Many skilled migrants are unable to find employment owing to a lack of knowledge about Australian job-seeking processes and workplaces; non-recognition of their overseas qualifications by employers and professional associations; and lack of local work experience. The *Skillmax* course includes the following:

- developing a greater awareness of workplace culture and trends in the Australian labour market;
- finding your 'fit' in their field of expertise;
- developing a career portfolio, including a resume and cover letter;
- strategies to identify employment opportunities;
- preparing for the job interview;
- career-management skills;
- marketing effectively.

The hard-copy survey for AMES was developed and piloted with AMES staff and eight clients. After some minor adjustments that resulted from the piloting exercise, the final survey was sent to AMES for distribution at *Skillmax* courses across various metropolitan sites where this program is run. The hard-copy surveys were administered by AMES staff and returned to the research project team. Two hundred hard-copy surveys were sent to AMES for distribution across *Skillmax* courses. A total of 59 surveys were returned which was a response rate of 29 per cent. The data cleaning eliminated six of these 59 surveys.

Engineers Australia is the peak body for the engineering profession and the official body that accredits engineers and undertakes the assessment of overseas engineering qualifications. The EA survey was conducted through the Victorian Branch of EA. The EA survey was developed from the AMES survey with the addition of engineering-specific questions. This survey was piloted with staff from Engineers Australia Victoria and adjustments were made where needed. The survey was then administered through EA's membership list through a targeted email to overseas-trained members. The survey was left open for seven days. The AMES survey data were entered into SPSS software and data cleaning proceeded resulting in six surveys being eliminated. The online EA survey used Qualtrics online survey software. Both sets of data were analysed using univariate and bivariate descriptive analysis.

Limitations

The limitations of the surveys primarily relate to the geographic sampling (AMES survey respondents were all based in metropolitan Sydney and EA surveys were based in Victoria) and the characteristics of the respondents from the two surveys. The two sets of respondents are different in that the *Skillmax* respondents were professional skilled migrants from a variety of professions; however, those in the EA survey were all engineers. It must be noted that of the 53 *Skillmax* respondents 14 were engineers. To account for this issue, the data from each survey were separated and analysed independently of the other. Comparisons were then made between the two datasets where the surveys had common questions. Another limitation is the relatively small samples sizes and that the statistics being presented are descriptive.

7. Findings

The sample for the survey is detailed below in Table 1 which provides demographics of the AMES *Skillmax* respondents (n = 53) and the EA survey respondents (n = 58). As can be seen, the majority of the *Skillmax* and EA respondents were male (72 per cent). Most of the respondents are in the 25 to 39 years age ranges and are more likely to be married than not. The large majority of *Skillmax* respondents entered Australia as a Permanent Resident (PR) (90 per cent) while 69 per cent of the EA respondents also entered as a PR. This indicates the majority of respondents are independent skilled migrant entrants to Australia. Not surprisingly, the majority of the *Skillmax* respondents were unemployed (72 per cent), as this is a requirement for entry to the course. Of the 44 per cent of EA respondents who were unemployed, 6 per cent had been unemployed for 1 to 12 months and 35 per cent had been unemployed for 1 to 4 years. The EA respondents were more likely to

be employed compared to the *Skillmax* respondents, and less likely to be studying when compared to the *Skillmax* respondents. Again, this is not surprising as the *Skillmax* respondents were on the AMES course.

Table 1: Demographics of AMES and EA Survey Respondents

Demographic	*Skillmax* **Survey** n (per cent)	**EA Survey** n (per cent)
Male	38 (72)	44 (72)
Female	15 (28)	14 (28)
20-24	1	2
25-29	9	13
30-34	22	17
35-39	12	9
40-44	4	5
45-49	3	3
50-54	2	4
55-59	0	4
Married	39 (75)	40 (65)
Single	13 (24)	14 (23)
De facto		5 (8)
Other		3 (5)
Children	24 (45)	30 (55)
No children	29 (55)	28 (45)
Entered Australia as Permanent Resident	48 (90)	41 (69)
Employed	15 (28)	31 (56)
Unemployed	38 (72)	27 (44)
Currently studying	17 (32)	11 (19)

n = number

As can be seen from tables 2 and 3 the majority of *Skillmax* respondents were born in China, Iran, or India and the EA respondents were predominantly from India, Sri Lanka, and the Philippines. The diversity in both samples, especially the EA respondents (25 different countries), is testament to the global attraction Australia has in respect of skilled migrants; the overwhelming majority in both samples come from non-English speaking countries. DIAC (2012) reported that the top 10 source countries for migrants in the 2011–12 migration programs were India, China, the United Kingdom, the Philippines, South Africa, Sri Lanka, Malaysia, the Irish Republic, South Korea, and Vietnam.

The qualifications of the *Skillmax* respondents were high, with 23 bachelor degrees, 12 masters and one doctorate. When asked about their profession, 14 of the *Skillmax* respondents were engineers. For the EA respondents, the qualifications were also high with two PhDs, 14 masters and 35 bachelor degrees. Of these bachelor degrees, seven were with honours.

Table 2: Country of Birth—*Skillmax* Survey Respondents

Professional Employment	Frequency	Per cent
China	14	29
Iran	11	23
India	83	17
Egypt	2	6
Bangladesh	2	4
The Philippines		4
Bosnia/Burma/Columbia/Lithuania/Russia/ South Korea/Sri Lanka/Vietnam	8	17
Total	48	100

Table 3: Country of Birth—EA Survey Respondents

Professional Employment	Frequency	Per cent
India	10	20
Sri Lanka	7	17
Philippines	5	12
Malaysia	3	7
China	3	7
United Kingdom	2	5
Colombia	2	5
Iran	2	5
Nepal	2	5
Austria/Bangladesh/Pakistan/Indonesia/ Vietnam/Brazil/France/Hong Kong/ Uruguay/Ethiopia/Egypt/Peru/ Saudi Arabia/Mexico/Russia/Irish Republic	16	38
Total	42	100

Table 4 provides data on the years of experience the survey respondents have within their chosen profession. For the *Skillmax* respondents, just over a quarter (26 per cent) had 1 to 5 years of experience while the majority had 5 to 10 years of experience (40 per cent), and just under a quarter had 10 to 15 years of experience (23 per cent). For the EA respondents, 28 per cent had 1 to 5 years experience and 5 to 10 years experience in their profession and, similarly to the *Skillmax* respondents, the EA respondents had just under a quarter (23 per cent) with 10 to 15 years of experience.

Table 4: Employment in the Profession

Professional Employment	Frequency	Per cent
Years of experience in their profession:		
Less than 1	0	5 (8)
1 to 5	5 (9)	17 (28)
5 to 10	14 (26)	17 (28)
10 to 15	21 (40)	14 (23)
More than 15	12 (23)	8 (13)
Have worked in their profession in Australia	7 (13)	32 (53)
Have experienced difficulties gaining employment in Australia	45 (85)	47 (80)

When asked about where they had applied for jobs 33 per cent of the *Skillmax* respondents indicated that they had applied for jobs outside Australian cities, with 55 per cent having applied for jobs in regional or rural areas and 67 per cent having applied for fly-in fly-out (FIFO) jobs. The EA respondents were much more inclined to apply for jobs outside Australian cities (64 per cent) and much more prepared to apply for jobs in regional and rural Australia (81 per cent), and to consider FIFO (81 per cent) than the *Skillmax* respondents. Table 5 provides the statistics from these survey questions for both sets of respondents.

Table 5: Mobility within Australia

Mobility Intention	*Skillmax* **Survey** n (per cent)	**EA Survey** n (per cent)
Applied outside the cities	17 (33)	37 (64)
Applied in regional and (or) rural areas	29 (55)	47 (81)
Applied for fly-in fly-out	35 (67)	46 (81)

Table 6 provides details of the responses to a multiple-choice question about why the respondents were attracted to Australia. As can be seen from this table, the most frequent responses to this for both sets of data included the same three attractors but in a different order. For *Skillmax* respondents the top three attractors were, in order of highest frequency, Lifestyle, Safety and Stability, and Career. For the EA respondents the top three attractors in order were: Safety and Stability, Lifestyle, and Career.

Table 6: Reasons for Migrating to Australia (multiple responses)— *Skillmax* **Respondents**

What attracted you to Australia?	*Skillmax* n	**Percentage of responses**	**EA** n	**Percentage of responses**
Attracted to the lifestyle	40	34	32	55
Safe and stable	34	29	36	62
Career	19	16	30	52
Easy to migrate	10	8	14	24
Other	10	8	11	19
Friends and family	6	5	18	31
Total (n)	140		157	

When asked if moving to Australia was a good career move, 45 per cent of the *Skillmax* respondents and 66 per cent of the EA respondents indicated it was. Table 7 details those *Skillmax* respondents who have undertaken work-related training in Occupational Health and Safety (OH& S) and English.

Table 7: Work-related Training

Work-related Training	*Skillmax* **Survey** n (per cent)
Undertook Occupational Health and Safety training	16 (30)
Undertook an English language course	28 (54)

When asked if they had any difficulties fitting into Australian workplaces, 60 per cent of the *Skillmax* respondents and 20 per cent of the EA respondents indicated that they did not have any difficulties; however, 40 per cent of the *Skillmax* respondents and 80 per cent of EA respondents did have difficulties.

The difficulties that the EA respondents indicated (42 respondents offered responses) were overwhelmingly to do with a lack of local or Australian experience. The following are examples of the responses:

- *no local experience*
- *local experience and qualifications*
- *being overqualified or not having local experience*
- *lack of local experience and communication skills*

- *not getting a response for applied jobs, though the job description matches with the expertise and experience I have in the past*
- *not finding a job for 9 months in 2009, not having 'enough local experience', whatever that means*
- *recruiters of known calibre ignore my CV (even in instances where there is a 100 per cent match) I didn't experience the same while working in England—lack of Australian experience is sometimes given as an excuse*
- *turn down of resumes by agents—reason being not having local experience*
- *no relevant local experience. Some do not even consider any overseas experience as relevant, which is a shame*
- *still on temp job after 11 months in Australia as I never match 200 per cent of the criteria set up by companies*
- *have had 11 interviews thus far, apart from one for technical reasons, I didn't get any feedback from the employers*

8. Discussion

The findings from these surveys indicate that the sample of onshore skilled migrants who responded to these surveys were predominately in the working age-range of 25 to 39 years, male and, in terms of country of birth, the majority of *Skillmax* respondents were born in China, Iran, or India and the EA respondents were predominantly from India, Sri Lanka, or the Philippines. The top three reasons why respondents were attracted to Australia were the same for both sets of respondents; however, they were given in a different order. For the *Skillmax* respondents, the top three attractors were in order of highest frequency: Lifestyle; Safety and Stability; and Career. For the EA respondents, the top three attractors were: Safety and Stability; Lifestyle; and Career. It would seem likely that there is a general consensus as to the top three attractors for skilled migrants to Australia; however, in terms of career, the data show the fulfilment of the career attractor to be problematic due to the high rates of unemployment for both samples.

The pull of the Australian metropolitan areas for recently arrived migrants is a long-accepted phenomenon; however, it is interesting to note the percentage of respondents who have applied for jobs outside cities (*Skillmax* 33 per cent and EA 64 per cent), in regional or rural areas (*Skillmax* 55 per cent and EA per cent), and FIFO jobs (*Skillmax* 55 per cent and EA 81 per cent). The findings demonstrate a strong willingness of onshore skilled migrants

to live and work outside metropolitan areas and this is especially the case for the engineering profession.

Although highly educated, and with the majority of respondents having over five years professional experience, the rates of unemployment would seem to indicate major barriers to securing employment in their respective professions in Australia. In general, the survey respondents were highly educated. The following data provide a summary of the education levels and years of professional experience of the survey respondents.

Skillmax Survey: (72 per cent of respondents were unemployed)

- 23 respondents had degrees;
- 12 respondents held a master degree;
- 1 respondent had a doctorate;
- 14 respondents were engineers;
- 26 per cent had 1 to 5 years professional experience;
- 40 per cent had 5 to 10 years professional experience;
- 23 per cent had 10 to 15 years professional experience;
- 13 per cent had not worked in their chosen professions since arriving in Australia.

EA Survey: (44 per cent respondents were unemployed)

- 35 respondents with bachelor degrees (of these bachelor degrees 7 were with honours);
- 14 respondents with master degrees;
- 2 respondents held doctorates;
- 28 per cent had either 1 to 5, or 5 to 10 years of professional experience;
- 23 per cent had 10 to 15 years professional experience;
- 47 per cent of respondents had not worked in the engineering profession since arriving in Australia.

Given the prominence of engineering professions on the SOL, and the growing evidence base on engineering skills shortages by key government and professional bodies (EA, Skills Australia, and the National Engineering Taskforce), this research highlights the levels of skills wastage and atrophy

being experienced by skilled migrant engineers who entered Australia as independent skilled migrants (as opposed to employer or regionally sponsored skilled migrants). The human capital imperatives of this wastage need to be tackled through the combined efforts of key stakeholders: government, education and training providers, and industry and professional bodies. Independent skilled migrants go to great personal financial expense and emotional cost in making the decision to start a new life in Australia and to contribute to Australia's economy through the use of their professional skills and training. Such engineering skills wastage and atrophy in the face of global and national engineering skill shortages remain at odds with the stated aims of Australia's skilled-migration program in terms of the need to attract and retain the highly valued human capital which is required to sustain the Australian economy and contribute to its growth. The rhetoric of skilled-migration policy does not match the reality for these independent skilled migrants.

9. Conclusion

This study surveyed two sets of onshore skilled migrant groups in New South Wales and Victoria and discovered a large pool of untapped talent. This pool of talent is skilled migrants who had mostly applied independently to migrate to Australia. They were accessed for the research through a Migrant Employment Service in Sydney (AMES) and an engineering professional body, the EA Victorian branch. The research found a large, highly educated and experienced pool of engineering talent seeking work in the engineering profession who could be targeted by the rail industry. A common complaint from this group of skilled migrants was that they were found to have a 'lack of local experience or knowledge', which was a negative employer perception and a barrier to their gaining employment in the engineering profession in Australia. If the rail industry were to tap into this potential pool of skilled labour, then they would need to be orientated and inducted into the rail industry through a set of strategies: rail-specific technical training and more generic soft-skills training, inclusive of Australian workplace practices; cultural competencies and English language proficiency; and communication skills. The rail industry could engage with engineering professional bodies to gain access to these potential recruits and orientate them to Australian rail workplaces and systems as a means of creating a talent pool from which to draw.

These findings have implications for other industries facing similar workforce issues, and also implications for skilled-migration policy. The findings point to what appears to be unacceptable levels of skills wastage and atrophy of independent skilled migrant engineers in Australia through the degeneration

of skills through their non-use and the risks of a long-lasting loss of human capital. This also points to economic loss and thus does not make economic sense, especially when the growing competition between settlement countries for highly skilled labour is gathering momentum. The OECD (2012) suggested strategies to combat this through investing in language training to facilitate mobility, and skills transfer and pre-departure training to familiarise immigrants with labour market requirements. Other worthwhile strategies could involve incentive schemes for employers, bridging programs which have a strong work-experience element, professional mentoring between Australian and onshore skilled migrant professionals, awareness programs for employers and commercial recruiting companies, targeted programs for onshore skilled migrants in employment preparation, and Australian workplace awareness. The resources needed to undertake these initiatives would only add value to the current human capital of these skilled migrants who gained entry to Australia based on that human capital. The work of bodies like AMES and EA who are running different programs and strategies to assist onshore migrant engineers enter the profession in Australia is testament to a suite of strategies which could be employed to assist these skilled migrants to overcome professional employment barriers. This would also assist industries and the Australian economy meet some of the challenges brought about by engineering skill shortages, particularly at a time when the resource-sector's demand for engineers has increased rapidly over the last few years.

These skills-wastage and atrophy issues may also be having an impact on other skilled migrant professionals who entered Australia as independent skilled migrants, such as medical practitioners and accountants. Future in-depth longitudinal research on independent skilled migrants is needed to explore these issues further. Professions-based research may also prove enlightening as to the employment outcomes and barriers for a variety of professionals who have entered Australia as independent skilled migrants.

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