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What is the relative advantage of an Australian tertiary degree to returnee and migrant Korean students, compared to U.S. and Korean tertiary degrees?

Christopher David Lawrance

A thesis submitted in fulfilment of the requirements for the degree of Master of Education (Research)

February 2015
AUTHOR’S DECLARATION

This is to certify that:

I. this dissertation comprises only my original work towards the Master of Education;

II. due acknowledgement has been made in the text to all other material used;

III. the dissertation does not exceed the word length for this course;

IV. no part of this work has been used for the award of another course or degree;

V. this dissertation meets the University of Sydney’s Human Research Ethics Committee (HREC) requirements for the conduct of research.

Name: Christopher David Lawrance

Signature: …………………………………………… Date: ……………………………
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Abstract

The global increase of students choosing to undertake study outside their home country and culture has brought with it questions as to relative benefits of being an international student. In this research the personal and career outcomes of cohorts of graduates from three, top-tier universities were compared to determine what effect, if any, was seen when a student chose one study destination over another.

As a test of wider trends, cohorts of Korean engineering graduates were identified, contacted and surveyed to gain empirical data on a range of graduate outcomes. These cohorts graduated from an undergraduate engineering program at either a Korean, U.S. or Australian university (one in each country), which had been selected to match as closely as possible for a variety of factors including: structure, size and prestige. A ‘mixed methods’ approach was taken to gather information on the graduates in terms of: income, age, gender and employment as well as personal and professional satisfaction. Seven respondents were selectively sampled for follow-up interviews to gain a deeper understanding of the effect of their choice of study destination.

The research found little difference in the graduate outcomes of the cohorts who studied in the U.S. and Australia. This is contrasted with the remarkable difference, particularly in the fields of satisfaction, of the cohort that had remained in Korea for their studies. These differences seemed to have only a weak link to income or access to employment, but did seem to have a strong link to perceived social status and often stated regrets at not having taken opportunities to have undertaken at least some studies outside their home country and culture.

This study focused on students from one source country, the Republic of Korea, graduating from only one award, undergraduate engineering, from only one university each in Australia, the U.S. and Korea, but it is hoped to be of use in identifying wider trends in graduate outcomes of international students. Not only is it hoped that this study will add to the body of literature in this field, but that it may also be of use to university administrators as well as international students and their families when making the decision as to where they will undertake their studies.
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Chapter 1 Introduction

International academic mobility is by no means a recent phenomenon, with some of the earliest examples being peripatetic, Sophist teachers plying their trade as early as the fifth century ‘Before the Common Era’ (B.C.E.) (Welch, 1997). From these early, modest beginnings, academic mobility has proven to be simultaneously a driver for, and a product of, change and development of civilisation, often paving the way to what we now refer to as globalisation.

At the very core of this single global civilization is rational, critical human thought and reasoning, which originated in the Hellenic world in the first half of the sixth century BC. From there, it followed a tortuous path over a vast area extending from China to Spain before eventually reaching the West to form the core of today’s global civilization. Scholars, polymaths, philosophers, and students wandering from one place to another throughout centuries played a key role in spreading ideas, knowledge, knowhow, and civilization. (Guruz, 2011, p. 2)

From these humble beginnings, of a small number of professional teachers travelling about giving lessons for payment, academic mobility has grown into a global phenomenon that sees millions of people moving to and from all parts of the world to teach and learn. Over time, international education has become both a major industry and a large, distinct domain of research that has grown, diversified and spawned numerous sub-specialties. Of central relevance to this study is the impact on the student of graduating outside her or his home country and more specifically, with all other factors being equal, the impact of selecting one country over another on a graduate’s ability to gain a job, earn income and achieve general satisfaction in career and life. The motivation to undertake this research was a balanced combination of professional and academic interest. The intention is that the results of this study be of service in addressing a perceived gap in the academic literature on a specific set of graduate outcomes of international students, but also to answer, or assist in answering, very practical questions students, parents, administrators and educators have surrounding the consequences of where study is undertaken.
The researcher lived, worked and studied (as an international student) in Korea for a combined total of ten years. After returning to Australia, he continued working in international education, interacting with international students from all over the world in a variety of capacities. Through these twenty years of experience, the researcher was frequently asked about the relative advantages of undertaking studies in various countries, most commonly, the United States (U.S.), the United Kingdom (U.K.), Australia, Canada and New Zealand. Answers to these questions were difficult to find. As a result of not being able to provide relevant, empirical answers to these questions, the researcher resolved to undertake this study. As is mentioned in the Literature Review (Chapter 2), there is a broad body of published work examining closely related areas such as: international student (as opposed to graduate) satisfaction, general graduate outcomes through the lenses of gender, race (mostly in the U.S.), perceived prestige of the education provider, discipline area, level of study, socio-economic background, returnee versus local graduate outcomes, migration patterns of graduates and so on, but little, if any, published work comparing graduate outcomes viewed through the lens of the location of study. More specifically, if an international student has the choice between undertaking their undergraduate studies in the U.S. or Australia, for example, what are the expected differences in graduate outcomes such as employment, earned income and satisfaction?

Through informal conversations with university-based educators and administrators over many years, in several countries, the three most commonly offered answers to the questions of why there is so little information on graduate outcomes on international graduates are: a) education providers find it too difficult to keep in touch with international graduates over a sufficient length of time to gain meaningful insight, b) graduates often change their citizenship over the years and don’t report this change to their former education provider, thus it is not possible to accurately differentiate domestic from international and, c) there is little incentive for education providers to disaggregate data in terms of domestic and international students, as the providers see all graduates as just graduates, regardless of their nationality. Whichever explanation, or combination of explanations, contains the greatest

\[1\] Many governments track migration patterns include information on education attainment, but this does not include data on earned income.
amount of veracity is open to debate, but there is an ‘elephant in the room’ that both government and private bodies collecting data on graduates may not wish to address.

From daily dealings with international students and graduates over many years, it has become clear to the researcher that being a foreign graduate (as opposed to a returnee graduate) is often a major impediment to gaining employment, particularly at the same level of compensation as a local graduate\(^2\). This seems to be a consistent theme, regardless of country. The researcher has participated in numerous employment fairs on various campuses in several developed countries. Employers at these events will often imply or even state outright that they prefer local graduates. Some international students report feeling discriminated against and even use terms such as racism. Although there will always be an element of racism in every culture and these cannot be dismissed out of hand, there are possibly more pragmatic forces also at play (Blackmore, et al., 2014).

### Overview of the Chapters in this Thesis

The following chapters of this thesis include a review of the relevant literature, presented in Chapter 2. This section commences with a brief overview of Human Capital Theory, its relevance and criticisms of it. This is followed by a summation of the previous and current literature on graduate outcomes from several perspectives and the interaction of the phenomenon of globalisation and patterns seen in international student mobility. Chapter 3 sets out the research methodology and explains the rationale for use of a mixed-methods approach in this study and the design of research undertaken; it also describes data collection and subsequent analysis. Chapter 4 presents the qualitative and quantitative empirical data gathered as part of this study and at the analysis of those data against existing institutional, national and international data. These data are examined with a view to identifying and, where possible, measuring differences in graduate outcomes as a function of which country

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\(^2\) The phenomena of foreign graduates earning lower salaries and having greater difficulty in finding employment does not hold for locals with international qualifications returning to their home country, i.e. ‘returnee graduates’. Returnees, particularly those returning to the less developed country after graduating in a more developed country, typically earn higher incomes than local graduates (Beine, Noel, & Ragot, 2014) (The Economist, 2013) (Welch & Hao, 2013).
the student chose to undertake their studies. Finally, Chapter 5 summarises conclusions drawn from the data in line with the stated goals of this research and offers recommendations for future research.
Chapter 2 Literature Review

Introduction

The purpose of this chapter is to review the literature pertinent to the central question of this thesis, i.e. ‘What is the relative advantage of an Australian tertiary degree to returnee and migrant Korean students, compared to U.S. and Korean tertiary degrees?’ As a starting point, the focus question ‘What is the significance of this study?’ will be addressed. The answer to this question is two-fold, with the first part being ‘Where does this research fit into the overall discourse of human capital theory?’ and the second being the more pragmatic ‘What are the practical implications of this research?’

Theoretical Frameworks

Human Capital Theory

It is obvious that both individuals and governments are keenly interested in the value of human capital and the returns expected from investments in themselves, the workforce and the overall economy. Nowhere is this truer than in the arena of investment in education. This can be clearly demonstrated by the Organisation for Economic Co-operation and Development’s Factbook (National Income per Capita) (OECD, 2012), Restuccia and Vandenbroucke (2010) and the Open Society Foundation (McGaw, 2005), each of which show the number of years of education for the average person has been increasing over the past few decades, and continues to increase globally, regardless of the state of the global/national economy, income levels or system of government. It is worth taking note of the fact that this strictly positive growth in schooling occurred for countries regardless of their initial income level. (Restuccia & Vandenbroucke, 2010, p. 6)

Taking a step back, the focus question that must be asked at this stage is: ‘Why does anyone take on study?’ The answer according to Schultz (1960) is a combination of consumption and investment, but for the majority of students the decision to study, particularly beyond the
compulsory years, is based on the assumption that more education will lead to more opportunities, higher income and greater satisfaction in one’s personal and/or work life.

Although Adam Smith, Alfred Marshall and other early writers acknowledge human capital as an element of economic development, it wasn’t until the 1950s, 1960s and 1970s, with the work of Gary Becker, Theodore Schultz, Jacob Mincer, amongst others, that more serious attention was given to attempting to better understand and measure the effects of human capital on individuals, groups and economies. In his book *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (1957) Becker’s primary stated goal was to “...estimate the money rate of return to college and high-school education in the United States.” (1957, p. 15), but Becker soon realised that his work addressed a myriad of other, hitherto incompletely understood, phenomena, of which among the most relevant to this research, were the following:

“(1)...the rate of increase [in earnings]...tend to be positively related to the level of skill.
(2) Unemployment rates tend to be inversely related to the level of skill.”

and

“(5) The distribution of earnings is positively skewed, especially among professional and other skilled workers.” (p. 16)

In his book *The Economic Value of Education* (1963), Schultz observed that in the United States in the 40s and 50s investment in human capital was having “...a pervasive influence upon economic growth, and that the key investment in human capital is education.” (p. viii) Shultz went on to comment “…lifetime earnings differentials associated with levels of schooling would indicate an exceedingly high rate of return to what high school and college students in the United States have been paying for their schooling.” (p. 5) Drawing upon Gisser (1962), Schultz further pointed out that this effect seemingly permeated all levels of society, even into areas of work that had not previously been considered susceptible to the influence of higher levels of education; “Gisser’s study implies a high rate of return to schooling even for hired farm workers in the United States, a finding which comes as a surprise.” (Schultz, 1963, p. 63)
Through Mincer's ground-breaking work: *Schooling, Experience and Earnings* (1974), it was shown that earned annual income in the U.S. increased by 5% to 10% in the 1950s and 1960s for every year of additional schooling beyond compulsory elementary schooling. With this stream of development established and tested against U.S. census data (Mincer, 1974), there was a depth of empirical evidence to support the proposition that increased education had a measureable and reproducible effect on average lifetime earnings. Numerous studies between then and now have further supported this proposition (Crook, Todd, Combs, & Woehr, 2011) (Kim & Lim, 2012) (Daly, Lewis, Corliss, & Heaslip, 2010) to name just a few. In addition, it has been shown that although much of this work was done with the United States as the focus, the same trends can be seen to a greater or lesser extent in other countries – in developing as well as developed economies (Barro, 1991) (Barro, 2001), (Psacharopoulos, 1994) (Psacharopoulos, 2006) (Willis, 1977) (Little, 1999), (Dore, 1976).

Using the observed effect of education on earning as a foundation, it was then possible to measure the impact of other variables on earnings – gender (Blackmore, 2011) (Buchmann, DiPrete, & McDaniel, 2008) (Ferber, 1995), migration/race (Carnoy, 1995) (Banks, 2007) (Banks & Banks, 2011), family structure (Davis-Keen, 2005) and many other factors (Shavit & Blossfiled, 1993) (Breen & Jonsson, 2005) have been examined in many settings over the past few decades. Although there is conjecture and debate as to which groups benefit more or less than others and why, certain near universal truths can be gleaned from this empirical research. Hinchcliffe (1995) put these rather succinctly:

“Education, occupational status, and earnings from employment have been shown in a wide range of studies to be positively interrelated, in countries adopting many different types of socioeconomic systems and at different levels of economic development.” (p. 20)

Although the connection between increases in education and increases in earnings has been widely observed there has been, and still is, a great deal of conjecture as to why. The early writers mentioned above (Becker, Schultz & Mincer) initially ascribed this increase in earnings solely to the principle that better educated individuals has acquired greater skills, hence more productive and therefore rewarded by the market at a rate commensurate with their increased value to an organisation or venture. Slightly later writers, most notably Collins
(1979) & (2002), Dore (1976) and Spence (1973) & (1974), attacked this explanation, and, in fact, the very basis of human capital theory, by raising the question of whether education (primarily higher education) was merely a ‘screening’ device and had little, if any, real impact on skill acquisition or productivity.

As testing of worker productivity against different levels and types of education is very difficult (Hause, 1972) (United States Government Accountability Office, 2014), the impact of any screening, signalling, credentialism or sheepskin effect is difficult to gauge accurately; although similar, and sometimes used interchangeably, these terms carry slightly different meanings. According to Groot & Hartag (1995) screening theory refers to a range of theories that are commonly contrasted with human capital theory’s assumption that greater education results in increases in productivity. The two main assertions of screening theory are that: a) education is a signal of inherent ability and/or that b) education, or more precisely qualifications, act as kind of entry pass into certain professions. The second form is often referred to as ‘credentialism’ or the ‘sheepskin effect’.

After some initial testing, Psacharopoulos & Layard (1974) dismissed the importance of the sheepskin effect, but after further testing modified their position (Psacharopoulos & Layard, 1979), putting forward a nuanced interpretation of screening theory that included two versions of screening: strong and weak. The rationale behind the weak version is that in the absence of a more reliable indicator of productivity, employers offer higher pay to those with higher levels of education, but over time the employees’ true productivity can be understood and wages of the more and less productive would diverge. The strong version, however, implies wage differentials would not disappear over time. In the conclusion of their 1995 work, Groot and Hartag stated: “The results of the empirical research do not conclusively discount screening theory. Education seems to have signalling aspects, however, the strong version of screening theory, which states that the signalling aspect of education prevails over the entire career, must be rejected.” (Groot & Hartag, 1995, p. 38)
Marxist Theory

A somewhat different view is taken by Marxist economists. Bowles and Gintis’s influential critique of human capital theory (*Schooling in Capitalist America* 1975), interestingly, also refuted the arguments put forward in one of the most strident and influential criticisms of increases in levels of higher education from within human capital discourse of the time, *The Great Training Robbery*. Although they heavily criticised Berg and Gorelick’s work, they acknowledged the presence of screening effects in education and employment. More importantly, from a Marxist perspective, they posit that human capital theory is fundamentally flawed due to its failure to recognise that one of the primary functions of education in a capitalist society is the production and reproduction of the class structure that separates workers from the capitalist class, and oppresses the former. This position is developed and reaffirmed in 2002 in their paper *Schooling in Capitalist America Revisited* (Bowles & Gintis, 2002). In their own words from 1975:

“The economic return to schooling and to age is in large part a return to a characteristic which allows the legitimate and effective exercise of authority over other workers.”

and

“This interpretation based on the need of the capitalist to legitimate and reproduce the power structure of the firm provides, we believe, a far more compelling explanation of the actual pattern of rates of return than does the human capital theory.” (Bowles & Ginitis, 1975, p. 80)

Post-structuralism

Another powerful alternative and antithetical framework that needs to be considered within this research is post-structuralism. The underlying premise of post-structuralism can be characterised as challenging the traditional or structuralist concept of objectivity. Without this objectivity, structuralism’s claim to represent or describe social reality is undermined. From a

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Post-structural perspective, neo-classical economics and therefore human capital theory are fundamentally flawed. More specifically Block (1990) contends: “The methodology of neoclassical economics rests on two basic building blocks. The first is the idea that the economy is an analytically separate realm of society that can be understood in terms of its own internal dynamics.” (p. 21) Block goes on to state: “The second key foundation is the assumption that individuals act rationally to maximise utilities.” (p. 22) As it can be proven that individuals are capable of acting irrationally, and forces such as politics and culture influence both the economy and individual choices, including what and where to study, neoclassical economics including human capital theory are imperfect frameworks. In this sense, such central tenets of economic theory such as ‘pursuance of self-interest’ and ‘rational decision-making behaviour’, as used in this research, must be questioned in terms of validity.

This is not to say, however that this research, along with other structuralist research is of no value. To paraphrase Vreind, the bad news is that rationality is necessarily constrained to be a contentless notion, however, the good news is that the economic approach to human behaviour allows us to do economic analysis even when problems may be ill-defined. (Vriend, 1996)

Discussion

From what has been outlined above, a very simple proposition can be distilled. Although there is argument as to why, by how much, and about levels of fairness, it can be agreed that increases in education increase the earning potential of both the individual and society. The OECD’s Education at a Glance 2012 sums this up as follows:

“Yet despite this burgeoning supply of well-educated individuals – as well as the faltering market conditions from 2008 forward – most people with higher education have continued to reap very good economic benefits. This signals that, overall, the demand for highly-skilled employees to meet the needs of the knowledge economy in OECD countries has continued to grow, even during the [economic] crisis.” (OECD, 2012, p. 13)

Even though human capital theory has undergone, and continues to undergo, substantial testing and modification from its original form, as can be seen from above, what can be seen as its core thesis has by no means been disproved.
The next focus question to be answered would then be: Why do students undertake studies outside their own country? Again, the OECD’s 2012 *Education at a Glance* gives an estimate of the size of the phenomenon: “In 2010, more than 4.1 million tertiary students were enrolled outside their country of citizenship.” (OECD, 2012, p. 360) Even without in-depth, academic research, the very fact that this many people choose to undertake studies overseas, the majority of whom fund their study out of their own pockets (Altbach & Knight, 2007, p. 294), indicates that studying for a period of time outside one’s country of birth/residence is widely held to be of value and worth investing in. While it is relatively simple to show that large and increasing numbers of students chose to undertake at least some of their studies outside their home country, however, what must be asked next is – Why? Motivations are obviously varied and often mixed. For some it is a way to escape persecution and/or danger in their homeland (Welch, 2008). For others, the time spent studying overseas would be akin to a holiday, but for the majority of international students there would be some expectation that this experience would deliver a return on investment of some kind, either in terms of being able to get a job more quickly, command a higher salary, gain promotion more quickly, receive preferential treatment when applying to migrate or even to live a more satisfying life, after having been exposed to another culture in another part of the world. Most international students seek to maximise the benefits of this experience/investment. If the student is from an English-speaking background, living and studying in an English-speaking environment is the most convenient option. If a student is not from an English-speaking background there is value in developing English language skills whether they end up living and/or working in a non-English-speaking country or work in an English-speaking country (AEI, 2010). Thus it can be assumed there would be strong demand for study at high-quality, English-speaking destinations. Unsurprisingly, very distinct patterns favouring well-known, English-speaking countries are seen where students travel for their studies. “The largest numbers of international students attend universities in English-speaking countries including the United States, the United Kingdom, Australia, Canada, and New Zealand.” (Altbach, 2005, p. 66). The same point is reiterated through many other notable sources including Welch (The Dragon, The Tiger Cubs and Higher Education, 2011, p. 49) and the OECD’s *Education at a Glance* (OECD, 2012). It must be pointed out, however, that the ‘Global Shift to Asia’ is making inroads to traditional patterns of mobility. China is perhaps the most dramatic example; it is rapidly increasing in popularity as a study destination. According to the China Scholarship Council (2012) 290,000 foreign students (excluding Hong Kong, Macau and
Taiwan) undertook studies in the People’s Republic of China in 2011. This was a 10.38% increase from 2010. Changes, such as the economic rise of China, obviously have and will continue to have, a distinct, direct impact on education and employment patterns globally.

Apart from China, the global shift to Asia is seen by the impact of a wider range of Asian countries actively seeking to attract international students. Lee (2015) highlights changes to the status quo by pointing out that the well-known top five destinations for overseas study are the United States of America, the United Kingdom, France, Australia and Germany and then adds “Australia and Japan, the traditional destinations in the East Asia and the Pacific region, were rivalled by newcomers such as China, Malaysia, South Korea, Singapore, and New Zealand.” (Lee, 2015, p. 24) Reasons adduced by Lee for this shift were the dramatic increases in domestic capacity in most Asian nations over the past 2 decades and, in the cases of Japan and Korea, desire to utilise overcapacity caused by declining domestic populations. As well, the quest for international status and world class universities in the Asian region, provides another basis for efforts to internationalise and attract more overseas students (Bhandari and Lefebure 2015, Welch 2015).

At this juncture it is important to make mention of Korea as a destination for international education. In this research Korea is primarily being analysed as a country sending students outside its national boarders, but it must be kept in mind this is only one side of the story of international education in Korea. The Republic of Korea (R.O.K.) has seen remarkable growth as a country of destination for a substantial and, for the most part of the last decade, increasing number of international students. According to United Nations Educational, Scientific and Cultural Organisation (UNESCO) statistics, from 2002 to 2011 the number of international students grew constantly, year on year, from 4,956 to 62,675. In 2013 the first recorded drop in international student numbers was seen with 59,472 students choosing to study in Korea (UNESCO, 2014). The profile of international students in Korea is somewhat different to that seen in the U.S. and Australia. The majority of foreign students in Korea are from source countries with a substantial Korean diasporic population; in developing countries where the majority of students going overseas to study are reliant on generous scholarships, those offered by the Korean government and many Korean higher educator providers provide an important platform for internationalisation.
Placing Korean education and Korean students in context is important to better understand the choices made by Korean students and their families. History shows that the U.S. took a central role in creating the post Korean War education system. Even after Korea took control of its own education system, the U.S. model was retained. (Seth, 2002) This can be clearly seen in the structure of the formal education system today. The influence of the U.S. is also seen in where Korean students choose to study, academic appointments in Korean universities, and employment opportunities of Korean graduate returnees in the general Korean workforce.

Terri Kim points out that 40% of Korean academics gained their PhDs outside of Korea. Of this number, more than two thirds were obtained in the U.S.A. In the case of the elite STEM institution, Pohang University of Science and Technology, 93.3% of the academic staff took PhDs in the U.S.A. In the case of Yonsei University, a highly regarded private institution, the proportion of American doctorates is 81% and in Seogang and Ewha Women’s University (two elite, top-tier comprehensive tertiary providers), it is estimated at 81.3% and 80.2% respectively. (Kim T. , 2005, p. 10)

From a qualitative perspective, there is also a belief that studying abroad, and specifically studying in the U.S., provides an advantage over students who graduate exclusively from local, Korean institutions. While interviewing 50 Korean graduate students who were enrolled in a research centred U.S. university, Jongyoung Kim quoted one of these students who summed up the prevailing attitude of Korean students to studying in the U.S.

“Many interviewees told me of personal job experiences demonstrating that US PhD holders are treated much better than others. The US degree is linked with initial job position, promotion, and income in workplaces. Professional trajectories in the workplace are strongly connected with US degrees.” (Kim J. , 2011, p. 116)

This backdrop shows why, despite possessing a strong, well-developed higher education sector of their own, Korean students still see value in undertaking studies outside Korea, and notably in the U.S. education system, that still has pre-eminence in the minds of Korean families and students. Further, it speaks to one of the central themes of this research: what is the relative advantage of an Australian tertiary degree to returnee and migrant Korean
students, compared to U.S. and Korean tertiary degrees? Simply put, with such a deep-rooted preference for the U.S., why would any Korean student study in any other overseas destination?

This is the point at which human capital theory interacts with the phenomenon of globalisation. Leading authorities on globalisation and education, Altbach & Knight, in 2007 describe globalisation and education as: “…the economic, political, and societal forces pushing 21st century higher education toward greater international involvement.” (Altbach & Knight, 2007, p. 290) They go on to point out: “Globalization tends to concentrate wealth, knowledge, and power in those already possessing these elements. International academic mobility similarly favors well-developed education systems and institutions, thereby compounding existing inequalities. Initiatives and programs, coming largely from the [global] north, are focused on the [global] south.” (Altbach & Knight, 2007, p. 291) Although Altbach & Knight make the point that at a global level, the majority of travel is from the Global South to the Global North, when the numbers are looked at more closely it is clear that students from all over the world have a strong predilection for studying at a single destination; the United States of America. Figure 1 from the 2012 World Education Services (WES) Trends in International Student Mobility (Choudaha & Chang, 2012) report show that the U.S. is the study destination for around half of the total number of students studying abroad (see below).
In terms of human capital theory, this would imply that a real or perceived superior return on investment induces a greater number of international students to undertake their studies in the U.S. rather than another country. Whether this is, in fact, true or not or perhaps was once true, but now less so, or is merely a self-fulfilling prophecy is one of the central questions to be addressed by this research. To test the veracity of the hypothesis that there are greater human capital benefits for international students choosing to study in the U.S., this research will compare the graduate outcomes of Korean students who have chosen to undertake a particular undergraduate degree at preselected universities in Australian, the U.S. and Korea. More information on this can be found in Chapter 3, Methodology.

It is important to note that the decision to undertaking studies outside one’s own country, although complex and multi-factored, can be analysed in ways that identify which factors, on average, have the greatest influence on deciding where to study. A good example of such analysis is provided by Beine, Noel & Ragot (2014). By reviewing data for 13 OECD countries and for students coming from 216 countries of origin, it was possible to compare variables in the sending and receiving countries such as: colonial (post-colonial) connections, cost of living, average income, availability of high-quality education, distance and the presence and size of diasporic communities. Three of the results of Biene, et. al.’s research are of central importance to this study to gain a clearer view of some elements of the decision-making process that students go through before selecting where they will undertake their international studies.

1. “In particular, we find a strong network effect. The presence of country nationals at destination tends to act as a magnet for international students. Interestingly, this effect is found to increase with the level of education of the network at destination. The higher the level of education of migrants already present in the host country, the higher the flow of students of the same nationality. The effects of diaspora outweigh the traditional role of previous colonial ties. Students tend to move more to former colonizer, not explicitly because of these direct colonial ties, but because they can rely on people from their origin country.”
2. “Students, in their location choice, are sensitive to the wage and to the quality of higher education at destination (which is consistent with a human capital approach), to the living costs and host capacity.”

3. “The quality of education, a proxy of academic excellence premium, is significant but appears to be a moderate attractor for international students. Furthermore, in contrast with living costs, education fees do not seem to act purely as a cost component of foreign education.” (Beine, Noel, & Ragot, 2014)

A further rationale for choice, not listed by Beine et. al, is language – English language systems figure highly among the most prominent destinations for international students, including South Koreans.

**Practical Implications**

Attention will now be turned to the second part of the two-fold question that opened this chapter. In practical terms, it is expected that this research will be used to better understand how choice of education destination affects graduate outcomes, particularly in terms of employment, earned income and satisfaction. These metrics were selected in line with the aforementioned major reasons for undertaking education, namely investment and consumption (Schultz, 1960).

Over the past few decades, the idea of what education is, particularly higher education, has changed. Education was previously seen as a right of the suitably talented and a responsibility of society, whereas in recent years education has become increasingly commodified and is seen more as a product to be purchased. In the same way, the student/teacher relationship is moving towards a customer/vendor relationship. In years gone by it would be considered incorrect, or at least inappropriate, to refer to education as an industry or a university as a business, but these concepts have, by degree, gained currency (Welch, 1988) (Hood, 1991)
(Maringe, 2011). This, new and continually evolving, reality has spawned research in the areas of student satisfaction and graduate outcomes, but there has so far been a gap or silence as to the relative advantage, if any, of choosing one study destination over another.

In 2010 Australian Education International (AEI) published *International Graduate Outcomes and Employer Perceptions*. In this report it was stated that: “Only one in ten respondents [international students who had completed the report’s survey in 2009] were unemployed and looking for work, with many of these being recent graduates.” and that: “[International] graduates who were working in Australia had a slightly higher level of unemployment than those who returned home…” (AEI, 2010, p. v) and further that: “…most employers surveyed, both in Australia and offshore, were interested in employing international graduates who had studied in Australia.” (p. vi)

One of the few pieces of research that explores graduate outcomes of international students in Australia is the *Australian International Graduates and the Transition to Employment Final Report* (Blackmore, et al., 2014). This report was produced with the support of the International Development Fund (IDP) and the Australian Research Council’s (ARC) Linkage Project. This report looks at the employment and migration trends of international graduates with engineering, accounting and nursing qualifications, but makes no direct comparisons of international and local graduates other than to state that most Australian employers will only consider hiring a recent international graduate if they had Australian permanent residency. (Blackmore, et al., 2014, p. 5)

AEI, IDP and the ARC’s efforts in this area are undoubtedly helpful and interesting, but do not shed much light on the difference in graduate outcome by choice of study destination (not to imply they were intended to do so). A question that could have been asked, and perhaps should have been asked of employers is; would you be more interested in employing an international graduate of an Australian or U.S. university or a graduate from another

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4 Part of the Australian Federal Department of Education
5 It should be noted this AEI research is of particular relevance to this research as employers were selected based on “their known propensity to hire graduates with Australian qualifications in the fields of accounting, *engineering* [emphasis added], hospitality and health care. Half of offshore employers were based in China, with a quarter in Singapore and most of the rest evenly split between Malaysia and India.” (AEI, 2010, p. 3)
developed country or even from a developing country? As neither AEI nor IDP (nor any other organisation) compare outcomes of international graduates from different countries, this research will seek to address a gap in the literature by use of the next focus question: For an international student, how does the option of studying in Australia compare to undertaking studies in their home country or the most popular international option, the U.S.? Despite these three economies (Australia, Korea and the U.S.) being very different, there are useful similarities that help frame this discussion. Firstly, all three are members of the OECD. According to the 2012 OECD Factbook, the U.S. ranks 4th in terms of gross income where Australia comes in at 9th and Korea at 21st (OECD, 2012). It is not within the scope of this research to look at all push/pull factors that may influence a student’s decisions, but this difference in income shows there is considerable potential financial incentive for a Korean student to consider studying overseas despite all three economies being considered ‘advanced’. Study leading to employment coupled with the possibility for migration in a country with higher average earned income would be enticing for a good many students. Obviously the bigger market of the U.S. and the higher (although only marginally) average level of income (as compared to Australia) must loom large in the minds of students considering where to study.

The OECD national average income numbers, however, can potentially be misleading as they are a somewhat blunt instrument even when expressed in terms of purchasing power parity (PPP). These figures measure average income across three large, very complex, highly developed economies and do not look specifically at the outcomes for migrants, let alone take into consideration their educational background. These factors, however, are features of a paper produced by Ross Garnaut et al. (2003). In this paper Australian and U.S. census data are utilised to compare the reported earned income of migrants from Korea to Australia with Korean migrants to the U.S. What was found was a surprisingly close similarity in educational attainment and income as a percentage of the native average. Korean migrants to the U.S. had, on average, 14.3 years of education, as compared to 13.8 years for those migrating to Australia. In terms of income, Koreans migrating to the U.S. earned, on average,

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6 In many categories the, OECD expresses income and costs across national borders in terms of purchasing power parity or ‘PPP’ expressed in US dollars. This system measures differences in price levels between its member countries by calculating the ratios of PPPs for private final consumption expenditure to exchange rates. The OECD normally expresses PPP in terms of US dollars.

7 In this paper by Garnaut et al., the term ‘native’ is used to describe a person born in that country.
-12.0% that of the average U.S.-born worker, whereas a Korean migrant to Australia earned -12.9% against the average Australian-born worker. We can see there is less than six months difference in average time of study and less than 1% difference in terms of average income. Thus it could be argued that although there is greater opportunity and potential to earn higher incomes in the U.S. than in Australia (as the U.S. is a much larger economy); in reality migrant outcomes are remarkably similar, at least in terms of reported earned income. It should also be noted that Korean migrants to the U.S. and Australia, on average, consistently earned less than the native\textsuperscript{8} average.

Seeking more advantageous educational opportunities may be considered by some a relatively recent phenomenon. This is, of course, not the case. In Alfred Marshall’s preface to the First Edition of \textit{Principles of Economics} first published in 1890, while discussing natural tendencies for individuals to accrue various forms of profit or ‘normal value’ he observes:

\begin{quote}
“The normal willingness to save, the normal willingness to undergo a certain exertion for a certain pecuniary reward, or the normal alertness to seek the best markets in which to buy and sell, or to search out the most advantageous occupation for oneself or for one’s children – all these and similar phrases must be relative to the members of a particular class at a given place and time: but, when that is once understood, the theory of normal value is applicable to the actions of the unbusiness-like classes in the same way, though not with the same precision of detail, as to those of the merchant or banker.” (Marshall, 1890, p. vii)
\end{quote}

What has changed over time, and become a feature of the current age, is that an ever-larger number of people and larger proportions of societies are more mobile and more able to take up study and work opportunities in a much larger proportion of the world (Delpierre & Verheyden, 2014). As mentioned at the beginning of this chapter, the vast majority of internationally mobile students leave their home country by choice with a variety of motives. The uniting theme among this huge and growing portion of the world’s population is the

\textsuperscript{8} Ibid.
belief that studying abroad is a personal and collective good. In the case of international students who choose to come to Australia, all available data suggests the vast majority of these students are satisfied with the experience. In December 2010, AEI produced the *International Student Survey 2010, Overview Report* (AEI, 2010). Survey results presented in the report confirm that a high percentage of international students in Australia are satisfied with their study and living experience. The Australian higher education sector data were compared to International Student Barometer (ISB) data from overseas, including surveys run at 162 universities in Europe, North America, South Africa, Singapore, New Zealand and the United Kingdom. On page 1 of the report it was announced that:

- 86% of Australian international Higher Education students reported “Overall satisfaction with living in Australia”
- 84% of Australian international Higher Education students reported “Overall satisfaction with studying in Australia” (AEI, 2010, p. 1)

This compares to the international, ISB benchmark of 86% for both of the above categories. The report went on to state that an area “…related to the students living experience that recorded relatively low levels of satisfaction [was]…*Opportunity to earn money*, 59% for HE - the same as the ISB…” (AEI, 2010, p. 2). When asked about how they, as students, viewed their employability, of Australian Higher Education respondents, 73% reported positively compared to 76% for the ISB. These numbers again show that an Australian higher education degree is held to be of value as are degrees from other developed countries, to more or less the same extent. What the AEI and ISB data show is that while international students are studying abroad (in developed countries covered by these reports) they report, for the most part, to be happy. What is not addressed in this these reports, or in fact in the extant literature, is what happens to these students after they graduate in terms of: where they go? do they get jobs? if they do get jobs, how much do they earn? and, are there any differences in levels of satisfaction as a function of where they live and work?
Chapter Summary

This literature review outlines a number of key findings. Among these is that, on average, higher levels of education produce higher levels of earned income, almost regardless of type of study undertaken, industry of employment or the state of the local or global economy. Despite rising costs of education and greater competition among graduates for well-paid entry positions, (The Economist, 2014), increasing numbers of students are choosing to undertake studies outside their own countries, in fact the phenomenon is currently more prevalent than at any other time in history. Further, it has been shown that the majority of students choose a relatively small number of developed, English-speaking countries and that these students are, for the most part, paying for these experiences themselves, albeit with likely support from family and loans, as most would lack sufficient income or savings to independently fund these experiences. The literature also shows these students have high levels of satisfaction while studying abroad. What is missing from the literature and the focus of this study is what happens to these international students once they leave the relatively sheltered cloisters of their chosen university and why they chose that university and that country.

This review provides implications for the design of the research required to help answer this question. As the scope is so large, and with the interests of the researcher in mind, a comparison of the outcomes of international students in Australia and U.S. will be the focus of this research with Korean students utilised as a representative cohort in all three countries.

The methodology to achieve this goal will be laid out in the following chapter.
Chapter 3 Methodology

Introduction

The purpose of this research is to examine what effect, if any, the choice of location for higher education has on graduate outcomes for international students. As this topic is so large, international students will be represented by Korean graduates and the full range of subjects offered at universities will be represented by four-year, undergraduate Engineering degree courses, as a test of wider patterns. One university has been selected from Korea, the United States and Australia, with as close a match as possible made for size, prestige/ranking and structure for the purpose of comparison.

The question this research is intended to address is; what is the relative advantage of an Australian tertiary degree to returnee and migrant Korean students, compared to U.S. and Korean tertiary degrees?

From the Literature Review (Chapter 2) it can be seen that there is somewhat of a silence in the area of measuring the effect of choice of education destination on graduate outcomes. To address this silence this study uses a combination of deduction and induction to gather qualitative and quantitative data to reveal what effects there might be.

Mixed Methods Research Approach

Central to the effectiveness of any piece of research is considered selection of the most appropriate research approach. As Cohen puts it “…every element of the research should not be arbitrary but planned and deliberate … the criterion of planning must be fitness for purpose.” (Cohen, Manion, & Morrison, 2007, p. 17) As this research explores graduate outcomes that contain both quantitative and qualitative elements, such as income and life satisfaction respectively, it follows that a research project intending to look at these outcomes would best utilise both research methods in a complementary fashion. This point was well made in 1946 by Merton and Kendall and quoted by Cohen et al. (2007):
“Social scientists have come to abandon the spurious choice between qualitative and quantitative data: they are concerned rather with that combination of both that makes use of the most valuable features of each. The problem becomes one of determining at which points they should adopt the one, and at which the other approach.” (Merton & Kendal, 1946, pp. 47-48)

More recently, the concept of ‘World View’ has been used to aid in the selection of research approach. The mixed methods approach is regarded as a ‘Pragmatic’ world view and a collection of both quantitative and qualitative data used sequentially in the design. (Creswell, 2014, p. 19) More specifically, utilizing Creswell, this research can be defined as an ‘Explanatory Sequential Mixed Method’. This method is one in which: “…the researcher first conducts quantitative research, analyzes the results and then builds on the results to explain them in more detail with qualitative research.” (Creswell, 2014, p. 15) This approach is the most appropriate for this research as the initial quantitative data are better understood when explained further with the qualitative data and therefore ‘explanatory’ and ‘sequential’. Creswell goes on to state: “This type of design is popular in fields with a strong quantitative orientation, but it presents challenges of identifying the quantitative results to further explore and the unequal sample sizes for each phase of the study.” (Creswell, 2014, p. 16) This meets the ‘fitness for purpose’ test as this research utilises a questionnaire for all research subjects followed by semi-structured follow-up interviews with a smaller number of subjects. Seven follow-up interviews were conducted. Three were with Yonsei graduates and two each for Northwestern and Sydney.

The quantitative portion of this study employs baseline data from the Organization for Economic Co-operation and Development (OECD), the National Science Foundation (NSF), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Asian Development Bank (ADB) and the World Bank Institute (WBI) to measure OECD, U.S., Australian and Korean averages in terms of education attainment, and earnings. These averages are then compared against the quantitative data obtained by the use of a specifically designed and carefully implemented questionnaire. The questionnaire has been prepared in light of reviewing the existing literature. All collected data were either gathered in, or transferred into, a digital format. The questionnaire was utilised to gather information on
graduates in terms of: basic demographics, level and type of study graduates completed, earned income (salary) and satisfaction. The questionnaire can be found as Appendix A.

The obvious drawback of these data in isolation is what Gerring would criticise: that they have little to say about individual cases (Gerring, 2007, p. 49). To balance the qualitative data, semi-structured interviews were employed to build case studies, drawing on at least two graduates of each of the three universities to gain a better appreciation of satisfaction levels of graduates beyond what can be inferred from the quantitative data. Interviewees were purposively selected to be as representative as possible of the target cohort and the wider population.

**Choice of Focus Degree (Award) for this Study**

As universities do not offer identical programs, it is important to select programs that are as similar as possible. Undergraduate Engineering was selected for this purpose for the following reasons:

- Consistency in the duration of study across the U.S., Australia and Korea at the undergraduate level (four years) regardless of local factors such as language, culture and historical background
- Consistency in curricula – there are differences between Engineering programs in different countries and institutions, but the practical and highly quantitative nature of the discipline dictates that curricula are similar, with very similar learning outcomes
- Private industry is the major employer of engineers. This means that earned income as an engineer is not as susceptible to the influences of non-market forces.

The selection of Engineering for this purpose is supported in recent research by Blum & Bourn (2013) who describe engineering as an “…excellent example to use to explore the relevance and influence of internationalisation and global perspectives…” (p. 39)

Obviously the discipline of Engineering can be studied at a variety of levels. For clarity of focus, the most common award within the spectrum of Engineering qualifications was selected for comparison – a four-year, undergraduate (bachelor) degree in Engineering. This eliminates comparability problems between standard three-year degrees in most disciplines in Australia (as well as other countries), and four-year standard degrees in the U.S. and Korea.
Certificates, diplomas and non-award programs will be ignored as these programs have a lower level of consistency in structure, entry and graduation requirements. For similar reasons, postgraduate qualifications are likewise ignored. According to Kaspura (2014) and the National Science Board (2012), engineering degrees have a high level of consistency across most universities, as well as the relatively high portability of engineering skills and qualifications worldwide, thus providing a sound basis for comparison in this study.

**Choice of Focus Cohort of Students for this Study**

Difficulties arise when comparing international graduates from all other countries studying in Australia and the U.S. against each other. For this reason a representative, exemplar country was selected to represent the average international student studying in the U.S. and Australia. The Republic of Korea (hereafter South Korea, Korea or ROK) was selected, as there have been large, relatively stable numbers of Korean students graduating from U.S. and Australian universities for many years (particularly from the late 1980s to the present). In addition, the top Korean Universities compare comfortably (though not perfectly) with top U.S. and Australian Universities in terms of size, structure and prestige as per the Quacquarelli Symonds (QS) World University Rankings⁹ as outlined below.

It must also be pointed out, the place of education in Korean culture is somewhat different to the U.S. and Australia. Seth (2002) sums it up well in his book *Education Fever* writing about the formation of the modern Korean state and its accompanying education system:

> “At all levels of Korean society there was faith in education as the basis for creating a new nation and conferring moral, political, and social leadership on those who had studied the hardest. This placed the issue of education not on the periphery but at the center of public discourse in the new Korean state.” (Seth, 2002, p. 59)

Traditionally, Koreans value education very highly, and exhibit one of the highest proportions of private spending on education among OECD countries (OECD, 2012).

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⁹ It should be noted that the various indices mentioned in this section, i.e. the Shanghai Jiao Tong, the QS and the Times Higher Education Supplement, work with different weightings when assessing education providers and that students may well choose an education provider on the basis of reputation.
Additionally, in recent years, accompanying Korea’s economic and social development, student demands of tertiary education have changed focus as Abelmann, Park, & Kim (2009) point out:

“Additionally, this new persona refers to a person whose arena extends beyond South Korea in an age of radical liberalization and the globalization of all forms of capital; in a word, competition does not end at the boundaries of the state. Thus, the present college generation is deeply committed to a cosmopolitan ideal in which people are able to circulate in a wide and increasingly global arena. At the heart of this personal development project is English mastery and many students described English as a necessary ‘base (beisû)’” (2009, p. 230)

Choice of Focus Institutions (Universities) for this Study

The earning potential of graduates from the same program, even in the same country, may be affected by the perceived prestige of the university or college from which they graduated (Kim, 2003). As this research does not seek to measure this effect, the sample group will be drawn from Korean graduates of representative, top-tier, comprehensive universities from Australia, the U.S. and Korea. These universities were selected to be as similar as possible on the basis of age, structure, size and prestige. All universities were ranked in the top 120 in the world in 2013 by the QS World University Ranking system. From the QS system:

- All were rated as ‘Very High’ (VH) in research output
- All were classed as ‘Comprehensive +’
- All were classed as either ‘Large’ (L) or ‘Extra Large’ (XL)
- All have been established for over 100 years.

The institutions selected are:

<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Rank</th>
<th>Size</th>
<th>Research Intensively</th>
<th>Breadth of Course Offerings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>Yonsei University</td>
<td>114</td>
<td>L</td>
<td>VH</td>
<td>Comprehensive+</td>
</tr>
<tr>
<td>Australia</td>
<td>University of Sydney</td>
<td>38</td>
<td>XL</td>
<td>VH</td>
<td>Comprehensive+</td>
</tr>
<tr>
<td>United States</td>
<td>Northwestern University</td>
<td>29</td>
<td>L</td>
<td>VH</td>
<td>Comprehensive+</td>
</tr>
</tbody>
</table>

Figure 2 - Rankings and categorisations are from the QS World University Rankings, 2013
There are, of course, many ranking systems. The three most notable are the Quacquarelli Symonds (QS) World University Rankings (WUR), the Shanghai Jiao Tong University’s Academic Ranking of World Universities (ARWU) and the Times Higher Education’s (THE) World University Rankings. Obviously there is variation in the number and type of criteria used in these systems and also variation in the weighting of criteria used in common. This explains how the same university, for example the University of Sydney, can be simultaneously, globally ranked in 2013 at 38th by the QS, WUR; 72nd by THE; and 97th by the ARWU. The utilisation of ranking systems in this research is not an attempt to critique the different methodologies or to assert that one is superior, more accurate or even more ‘fit for purpose’ than another. These systems are merely indicators that the institutions at the centre of this research are in the same band or level, internationally and within their own country and region, and that provides enough validity to move forward with this comparative research.

Although all three of the aforementioned ranking systems were reviewed, the QS system is the system selected to assert the relative rank of these three institutions, as it incorporates factors of perceived prestige, such as size, age and overall research profile. When comparing these three universities via the other two systems, the spread of scores is greater than the QS spread, both in terms of overall institutional score and the discipline scores for THE, WUR and the ARWU from the Shanghai Jiao Tong system. It should be noted that the discipline ranking within the QS system is sufficiently different to THE, WUR and the ARWU to make comparison across the systems complex and unwieldy to the point that confidence in any such comparisons would be sufficiently low to be considered of little value. It must be stressed again that the use of these systems is not intended to rank universities or programs against each other, but rather to provide confidence that they are comparable types of institutions, both globally and within their own regional and national environments. In addition, it must be pointed out that, by design, none of these universities are specialist engineering universities in the way that the Massachusetts Institute of Technology (MIT), Korea Advanced Institute of Science and Technology (KAIST) or the Royal Melbourne Institute of Technology (RMIT) are. The aim of this research is to look at the graduate results in a way that is indicative of wider trends rather than the perceived prestige of a particular university or program. For the same reason, very high profile universities such as Oxford, Cambridge, Yale and Harvard were excluded from consideration as the name value of their
‘brand’ is so strong that it would risk skewing data to the point that is was, in reality, only measuring perceived prestige of the university rather than the intended result of examining the role the choice of country plays in graduate outcomes. For the sake of completeness, it should be noted that Yonsei and Northwestern are private universities, like the majority of higher education providers in Korea and the United States, while the University of Sydney is a public institution, as are most of the higher education providers in Australia. This selection was made as these universities are typical of their home environment and therefore comparable despite two being private and the other public.

Korean Engineering graduates from each of these universities were contacted and invited to complete a questionnaire. Originally it was intended to focus on the graduating years of 2005, 2010 and 2012. This was intended to provide a longitudinal element to the study and avoid stochastic events such as the Asian Financial Crisis and the Global Financial Crisis that could affect graduate outcomes. This, however, proved impractical as not many of the respondents graduated within these years, despite targeting graduates from these years. Rather, the results came as a spread of respondents who graduated from 1969 to 2013. This was not a major problem as income bracket can be compared to the number of years since graduation to examine the effect of earning over time. From the pool of questionnaire respondents, two graduates from the University of Sydney and Northwestern University and three from Yonsei University\textsuperscript{10} were invited to participate in an in-depth, semi-structured interview. Purposive sampling was employed to select as representative a group as possible.

\textsuperscript{10} As all six original interviews were undertaken with male respondents it was felt that a female was needed to provide better balance in the data. A seventh respondent was invited for an interview as the only female to provide contact details from the questionnaire.
Sampling

Due to the enormous size of the potential sample group, i.e. all Korean students who have graduated from Australian, Korean and U.S. universities, the scope of the project was deliberately made manageable, while trying to maintain a level of generalisability. Data were gathered to compare average income and levels of graduate satisfaction between three cohorts of Korean graduates:

- Korean Engineering undergraduates graduating in Korea,
- Korean Engineering undergraduates graduating in the U.S., and
- Korean Engineering undergraduates graduating in Australia.

A questionnaire was prepared in English and Korean and available on-line and in a paper-based format. The structured portion of the questionnaire was designed to capture data on: age, gender, time from graduation to employment, university from which the student graduated, current salary level, time taken to secure first job, current level of satisfaction with lifestyle, view of future opportunities, reflections on chosen Engineering program, with hindsight. The semi-structured portion (open-ended questions) gave participants an opportunity to provide feedback on the perceived effect of having studied overseas or their choice to have stayed in Korea.

Graduates were contacted via formal and informal alumni networks and asked to complete a questionnaire. Snowball sampling was also be used; surveyed graduates were asked to extend an invitation to participate in this study to fellow graduates. This approach exploits the traditionally strong bonds between Korean students studying overseas and in graduating classes at Korean universities. In this research the Korean Students’ Associations (KSA) of the University of Sydney and Northwestern University were contacted and agreed to send out the invitation to their Engineering members. Graduates of Yonsei were contacted via an e-mail sent by the alumni office of Yonsei University. The McCormick School of Engineering at Northwestern University was approached and a request to contact Korean alumni was made, but this was declined, citing a Northwestern policy not to engage with any external surveying of their student body.
Other Issues Regarding Sampling

Gender

The greatest identifiable weakness in this research is the selection of Engineering as the example discipline. This is due to the fact that historically, Engineering has been a male-dominated discipline, and although this imbalance has been somewhat redressed in recent years, the sample groups are still heavily male. This is perhaps a particular issue, given longstanding patriarchy in Korea, including in employment (Shin, 2012). It was intended that this problem would be addressed with purposive sampling, but as only one female respondent volunteered to be interviewed this approach can only been seen as partially successful.

Military Service

Most Korean males must undertake a period of military service\(^{11}\). In addition, some Korean females choose to undertake military service, although this is rare. This could obviously affect the length of time it takes to get the first job after graduation, depending on when the individual choses to do their military service, that is before during or after their university studies. This factor was taken into consideration, but after gathering all the data it was shown that most Korean males chose to undertake their military service either before or during their undergraduate studies. This meant income results were not impacted as income over time was measured from year of graduation.

Self-Selection Bias

When attempting to measure satisfaction with choice of study destination, it is assumed that students who select a particular country will probably have an interest in, or connection with,

\(^{11}\) Conscription, or ‘mandatory military service’ or ‘compulsory national service’ in the Republic of Korea (South Korea), is legislated by Chapter II, Article 39 of the Constitution of the Republic of Korea (1948 revised 1987) for all citizens. The current Conscription Law, enacted in 1965, however, applies only to males, aged between 18 and 35, although women are allowed to enrol in the Reserve Officers’ Training Corps as of 2010. Two tiers of service exist: active duty or non-active duty. Length of service has changed several times over the history of this program. Currently service varies according to branch: 21 months for Army and Marine Corps, 23 months for Navy, and 24 months for Air Force. The non-active duty service, e.g. civil service or public service workers, is from 24 months to 36 months.
that country and would therefore be more likely to rate the experience in that country highly, assuming their pre-departure expectations were realistic and that no major disappointment was experienced during the time in that other country. It is assumed that this type of bias would be the same in the U.S. as in Australia. Thus, the bias is noted, but it is assumed that it would create a fairly even effect regardless of the student’s choice of study destination. As most Korean universities are private and tuition fees rival those of U.S. and Australian providers, it must be assumed that Korean students studying in Korea have made the decision, either actively or passively to stay in Korea to study. There will be exceptions in the cases of those with family obligations or other relationships that would mean they cannot realistically undertake studies outside Korea.

Data Gathering

The majority of questions were designed to be pre-coded through use of multiple-choice options. Thus a known range of responses was anticipated, which simplified analysis. For many questions there was the opportunity to provide additional information should the responses provided prove unsuitable. The final question, what, if anything, would you do differently if you had the chance again? allows respondents the opportunity to reflect on their education choices in greater depth. The expected benefit of this question was that it would provide broader perspectives and deeper insight into the results of their choice of education pathway. To maximise participation only 19 questions were included on the questionnaire, as excessively long surveys tend to lead to lower response rates. The questionnaire was uploaded into Google Documents and an invitation to participate and the link to the questionnaire were sent by e-mail to Engineering graduates with Korean language and English language options to generate as high a response rate as possible. The questionnaire was kept active for four weeks in July, 2014.

Questionnaire Data were collected anonymously. At the end of the questionnaire respondents were invited to make themselves available for a follow-up interview. If subjects were interested in participating in a follow-up interview they then were asked to provide a phone number, an e-mail address, or both.
Interviews

After gathering the data from the questionnaire, semi-structured interviews were conducted with selected subjects. All interviews were conducted by the researcher. Interviewees were asked a prepared series of three questions. The questions used can be found as Appendix D.

Interview questions were aimed at eliciting more considered responses than would be possible from a questionnaire. The interview format allowed respondents more time and greater flexibility for responses. Interview data was then used in combination with those collected from the questionnaire and previously published literature surrounding this area of research.

Rapport

The researcher established a positive rapport during interviews through the appropriate delivery of questions, facial and body responses, as well a consideration of cultural and cross-cultural issues. The interviews were conducted primarily in English, as all subjects had either studied in English-speaking countries or had developed strong English language skills through other means. As and when required, the interviewer, a Korean speaker, also acted as translator, to ensure participants were comfortable and their thoughts and feelings were being clearly expressed.

At the commencement of each interview, the purpose and objectives of the research were explained to the subjects in a clear and professional manner. Eye contact was maintained, and appropriate facial expressions and body postures used. The interviews were recorded for later referencing.

Interview Duration

Interviews were between thirty minutes and one hour in duration. The main purpose of the interview was to uncover more about what effect, if any, choice of location for their undergraduate studies had had on their work and private life. The researcher’s experience as
an international student and education professional in Korea brought the interviewer and the subjects closer. This facilitated open and frank appraisals of the subject’s experiences, and outcomes, thus encouraging more genuine communication. Interviews were conducted from late July to early August 2014. For this research, data were collected through e-mail questionnaires and semi-structured interviews in Australia, Korea and the U.S.

**Results**

There were a total of 67 useable responses from the questionnaire:

- 42 completed questionnaires returned from Yonsei University graduates
  
  Gender breakdown for Yonsei respondents: 36 ♂ + 6 ♀

  Age breakdown for Yonsei University respondents:
  9 aged in their 20’s
  23 aged in their 30’s
  4 aged in their 40’s
  6 aged in their 50’s or above

- 15 from University of Sydney graduates
  
  Gender breakdown for University of Sydney respondents: 12♂ + 3♀

  Age breakdown for University of Sydney respondents:
  8 aged in their 20’s
  6 aged in their 30’s
  0 aged in their 40’s
  1 aged in their 50’s or above

- 10 from Northwestern University graduates
  
  Gender breakdown for Northwestern University respondents: 9♂ + 1♀

  Age breakdown for Northwestern University respondents:
  4 aged in their 20’s
  2 aged in their 30’s
  4 aged in their 40’s
  0 aged in their 50’s or above
Through the review of the relevant literature and testing, appropriate tools were developed to capture qualitative and quantitative data on the question of graduate outcomes of international students, vis-à-vis choice of the location of their tertiary studies.

The results are discussed in the following section, Chapter 4.
Chapter 4 Findings on the Relationships Between Location and Graduate Outcomes

Introduction

This section looks at empirical data collected for this research and at the analysis of those data and compares the data to existing institutional, national and international data. This process is described by Merriam as “…a complex process of making sense of data” (Merriam, 2009, p. 8). Similarities and differences are analysed in light of relevant, existing research. Although there is a considerable body of published work examining graduate outcomes, previous work is mostly focused on choice of discipline or graduate outcomes viewed through the lens of perceived institutional prestige. There is a silence in the literature when it comes to the effect of location of study. This research is intended to address some of these silences by examining the effect of choosing one destination over another. To ensure as much as possible of the story was captured, the inquiry followed two paths; one quantitative and the other qualitative. As outlined in the methodology chapter above, carefully selected cohorts have been chosen to represent the majority of students and test findings against wider patterns.

This chapter begins by presenting the quantitative data which contextualises employment, gender and location of study then goes on to the second part, presenting the quantitative data on expectations and relative satisfaction with accompanying analysis.

Quantitative Results

The quantitative elements of this research include commonly examined metrics used to compare graduates.

1. Current income bracket
2. Year of graduation
3. Time taken to get first job after graduation
4. Gender
5. Current sector of employment
6. Current country of residence
7. Job search locations

Analysis of each of these areas follows.

**Current Income Bracket & Year of Graduation**

As a starting point for this investigation, measurement was taken of how much respondent graduates were earning compared to how long they had been working. This provides a clear, simple, standardised picture of the activity of these graduates in the labour market. These results are then contextualised via comparison with larger, relevant data sets. When year of graduation was compared to current income brackets it showed that, on average, graduates of the University of Sydney rose to the highest income bracket in the questionnaire ($100,000.00 U.S.D. or above) considerably more quickly (6 years) than those of the other two universities; 21 years for Northwestern graduates and 20.75 years for Yonsei graduates.

The comparatively faster average rise of University of Sydney graduates is likely to be a feature of the relatively small sample size of University of Sydney graduates. The result may well be skewed by some unusually successful individuals, rather than being indicative of a difference in income of engineering graduates, international or otherwise, in Australia. This position is supported by data gathered from one of the follow-up interviews with a University of Sydney graduate, who mentioned that with his undergraduate degree in mechanical engineering he was able to secure a job very soon after graduating. His job was in a regional area of Australia working for a mining company and with the mining boom in full swing, he was earning over $100,000.00 AUD per year, very soon after graduating. This type of result was not seen with any of the graduates from the U.S. or Korea.
Data from Graduate Careers Australia (GCA) in a ‘Group of Eight’ (Go8)\(^\text{12}\) produced Policy Note dated July 2014, showed the median graduate income in Australia (for fully employed graduates up to 4 months after graduation) was $52,000.00 AUD per annum. For engineers, however, it was $63,000.00 AUD (Group of Eight, 2014). The same Policy Note, using data drawn from the Australian Bureau of Statistics’ (ABS) 2011 census, shows the average yearly increase in earned income for graduates is 5.7% per year. For engineers, the rate of increase was lower than the average at 3.9% per year. In other words, Australian engineers start with higher salaries than the average graduate immediately after graduation but the rise in income is lower than the average after this.

It might be argued the ‘name’ or ‘brand’ value of an elite university like the University of Sydney, or another Group of Eight university, might account for this faster rise in income. This is unlikely as the ‘premium’ graduating from a Group of Eight university has been shown to be minimal, when compared with Australian national benchmarks.

As Li and Miller (2013) report:

“…the earnings of graduates of the Go8 do not differ significantly from the benchmark group…” (Li & Miller, 2013, p. 22)

In the same paper, Li and Miller went on to state:

“The relative strength of the field of study effects suggested that it is what graduates studied, rather than where they graduated from [in Australia], which made a large difference in their labour market outcomes.” (Li & Miller, 2013, p. 25)

The next logical step involved a review of average salaries of U.S. engineers. This provides a benchmark against which to compare the Korean graduates of the U.S. institution. The best

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\(^{12}\) The Group of Eight (Go8) is a coalition of leading Australian tertiary institutions, intensive in research and comprehensive in general and professional education. Membership includes: The University of Sydney, The Australian National University, Melbourne University, Monash University, The University of New South Wales, The University of Adelaide, The University of Western Australia and The University of Queensland.
currently available data on salary brackets for engineers in the U.S. are found in the *Engineering Income and Salary Survey 2013* (Enetrix, A Division of the Gallup Group Inc., 2013). This yearly report is produced jointly by the American Society of Mechanical Engineers (ASME) and the American Society of Civil Engineers (ASCE). Figure 4 (below) from the *Engineering Income and Salary Survey 2013* (Enetrix, A Division of the Gallup Group Inc., 2013) shows it takes, on average, 15 to 19 years of work to reach $109,000 U.S.D. for a mechanical or civil engineer. Members of the ASME and the ASCE are primarily U.S. citizens working in the U.S., but membership is open to foreign nationals and membership does not require that members work or reside in the U.S. This means that these figures can be seen as not just a U.S. benchmark but more akin to a global standard of income for first-world engineers.

**Figure 4 - Salary brackets as a function of number of working years for members of the ASCE and the ASME in 2013**

The third step in this section was to compare incomes of those who graduated in Korea, with those who graduated in Australia and the U.S. Data gathered in this research displayed a remarkable similarity between the cohorts that graduated in the U.S. and Korea which shows a strong correlation with the aforementioned benchmarking data. In numerical terms, it took (on average) 20.75 years for Yonsei graduates to reach the highest income bracket of this research ($100,000 U.S.D. or higher). This is in comparison with 21 years for Northwestern graduates. Income of U.S. and Korean graduates in this research were closely comparable to
the benchmark data. This increases confidence that engineering programs at these generalist\textsuperscript{13} universities are on par with their fellow professional engineers working in the U.S. and other countries. Northwestern and Yonsei graduates continue to show very similar outcomes. University of Sydney graduates consistently spent less time to achieve higher levels of pay but again, the higher University of Sydney averages were most likely affected by a few, high-achieving graduates, probably associated with the Australian mining boom. Taking a closer look at the bottom end of the scale, time spent in the lowest earning bracket ($0 to $40,000) showed even greater similarity. For University of Sydney graduates it was 4.75 years, for Northwestern it was 4 years and for Yonsei graduates it was slightly less at 3.25 years. When looked at as a whole, it can be shown that graduates who stayed in Korea moved up the salary ladder somewhat faster in the early stages of their careers than those who left Korea for the U.S. or Australia.\textsuperscript{14} This is supported by data from the next section looking at time taken from graduation to first job.

\textbf{Time taken to get First Job after Graduation}

Another key metric within the quantitative portion of this research is the measurement of time taken to gain employment. This data builds on the previous section (income data) showing demand in the labour market for these graduates. The most obvious feature of Figure 5 (below) is the first (far-left) cluster of columns representing graduates who reported getting their first job ‘zero to one month’ after graduation. When translated into percentages; 33\% of University of Sydney graduates, 40\% of Northwestern and 73\% of Yonsei graduates responded that they had their first job within a month. Data gathered through interviews with Yonsei students confirmed that most Korean engineering graduates have at least one job offer before they graduate and typically move directly into their first job after graduation.

\textsuperscript{13} ‘Generalist’ as opposed to specialist S.T.E.M. (Science, Technology, Engineering and Mathematics) higher education institutions – although there is no implication that there is necessarily any difference.

\textsuperscript{14} This phenomenon will have been created by a number of features such as that Korean graduates in the US and Australia are often from non-English speaking backgrounds, whereas Korean students graduating in Korea are almost guaranteed to be of a native Korean-speaking background.
The most obvious explanation for the pronounced difference displayed by the Yonsei graduates is ‘home ground’ advantage. In most, if not all, countries it is easier for local graduates to find employment than non-local graduates. There are a variety of reasons for this, including language barriers, legal difficulties in hiring foreign nationals and various cultural factors, mostly working against non-local graduates. There is little written about this topic, but this issue is addressed by Blackmore et al.:

“International graduates face additional barriers when seeking post-study employment compared to their local counterparts. Lack of local networks, issues surrounding communication skills and cultural differences and limited knowledge of, and exposure to, the local labour market are considered some of the barriers to employment for international graduates.” (Blackmore, et al., 2014, p. 20)

With this in mind, the most effective way to test the assumption that the Yonsei respondents gained their first job more quickly because they were local, would be to compare them with equivalent, local University of Sydney and Northwestern University graduates. Unfortunately it is challenging to find data comparing the graduate outcomes of local and international graduates in terms of time taken to get their first job. Education providers rarely differentiate graduate data along the lines of domestic and non-domestic. In addition, national data-
gathering entities, understandably, only gather information on graduates who are citizens of that country.

Fortunately, inferences of this effect can be drawn from an Australian perspective through the results of the 2013 GradStats (Employment and Salary Outcomes of Recent Higher Education Graduates) survey (Graduate Careers Australia, 2013). From these results it is known that, on average, 71.3% of recent Australian graduates found full-time work within 4 months of graduation in 2013. This compared to 62.3% of Australian graduates who come from a non-English speaking background\(^\text{15}\). This 9% disparity could be interpreted as reflecting the difficulty recent migrants, many of whom would have been international students from non-English speaking backgrounds and/or their children, face in gaining their first job after graduation. The aforementioned 9% disparity does not measure all elements of the added difficulty in finding a job for foreign graduates of Australian universities, as it only accounts for those who had Australian citizenship at the time the survey was taken. The majority of foreign graduates of Australian universities will not have Australian citizenship and will face greater difficulty getting their first job in Australia as a foreign national (Southommasane, 2014). Despite the GradStats survey results being an imperfect comparison, it clearly shows the difficulty of gaining employment for non-locals. The severity of this impediment varies widely between countries. Obviously, migration policies make it easier or more difficult to work in or migrate to specific countries. One of the factors that makes a particular country more appealing, particularly for tertiary study, is the opportunity to gain employment during or soon after studies and the possibility of migration. An international student may not have a clear plan for what she/he intends to do after graduation but the opportunity to work in the country of study and a clear pathway for migration are obviously incentives to undertake studies in a particular country.

At this juncture it must be pointed out that there is a long-standing tradition of foreign graduates of Australian and U.S. education providers finding work, and becoming citizens of those countries. In addition, there is an equally long-standing advantage to engineering graduates, local and international, seeking employment in the U.S. and Australia. In fact, it could be argued that both Australia and the U.S. have a chronic but low-level shortage of

\(^{15}\) This category does not include Aboriginal and Torres Strait Islander graduates.
engineers and because of this, are dependent on foreign-born engineers to maintain strong and stable economies. The National Science Board’s Science and Engineering Indicators 2014 report describes the U.S. situation.

“Foreign-born individuals account for slightly more than one-fourth of all workers in S&E [Science and Engineering] occupations, which is higher than their representation in the entire college-educated work force (15%).” (National Science Board, 2014) p. 3-6

In Australia, the Engineers Australian annual statistical report, describes a similar scenario - in fact an even stronger trend towards foreign-born engineers, than in the U.S. case.

“Between 2006 and 2011, 71.4% of the increase in Australia’s supply of qualified engineers came from skilled migration and resulted in the balance of the engineering labour force changing from an Australian born majority in 2006 to an overseas born majority in 2011.” (Kaspura, 2013, p. 12)

In the same report, it is highlighted that the three greatest growth areas in engineering positions in Australia over 2013 were in mining, power and gas engineering and this was a result closely related to the Australian resources boom. (Kaspura, 2013, p. 56)

The case is quite different in Korea. Korean universities graduate a much higher proportion of engineers than the U.S. or Australia. OECD data show, in 2011, Australia graduated 20,702 engineers, the U.S. 162,649 and Korea 95,391 (OECD, 2010). The population of the U.S. is over six times larger than South Korea’s but the U.S. only produces about 170.5 per cent as many engineers; hence, proportionally, there are many more engineers in Korea than the U.S. As for the comparison between Australia and Korea - the population of Australia is about half that of South Korea, however, Australia produces only 22 per cent of its engineers. Again, proportionally, Korea vastly exceeds Australia in terms of graduating engineers. The most relevant point here is that foreign-born, skilled workers such as university graduate engineers don’t typically work in, or migrate to Korea. This is in contrast to the U.S. and Australia where a quarter to half of engineers are foreign-born. This gives Korean-born engineers access to a labour market virtually closed to outsiders in Korea while retaining access to the
labour markets of other developed countries such as the U.S. and Australia. Although this nexus of education, migration and labour market dynamics is closely related to many of the themes of this research it falls outside the scope of this work and will only be acknowledged as related and relevant and not explored.

In summary, it can be seen that although there are greater obstacles for non-local graduates of U.S. and Australian institutions, being an engineer provides greater opportunity in gaining employment that can, and often does, lead to migration. From the data gathered in this research it can be shown that time taken to get a job for Korean-born engineering graduates of the Australian and U.S. institutions in this study are very similar. This would support the inference that the choice of location of study between the U.S. and Australia has negligible impact on the time it takes to gain employment.

**Gender**

The next factor examined is gender. When comparing the gender ratios of the respondents in this research with the gender ratios in the undergraduate engineering programs in their university, there was a high level of correlation. This gives confidence that the sample groups in this research are representative of the institutions they graduated from, in terms of gender balance. The Northwestern cohort showed the greatest variance - this is examined below.

**Figure 6 - Percentage of female questionnaire respondents**

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% Female</td>
<td>10% Female</td>
<td>13% Female</td>
</tr>
</tbody>
</table>

**Figure 7 - Percentage of female, undergraduate engineering students at three focus institutions**

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>22% Female</td>
<td>30% Female</td>
<td>15% Female</td>
</tr>
</tbody>
</table>

Source: Correspondence with the statistical offices of the institution

As can be seen in Figures 6 and 7 (above), comparison of the gender ratios of the overall undergraduate engineering populations and the questionnaire respondents for Sydney and Yonsei were both within 2% of each other. The Northwestern comparison, however, showed
a 20% difference. The gap between the response rate and the overall program rate at Northwestern can be explained by a recent, rapid increase in female enrolments, that is, 33% from 2008 to 2012. (Yang, 2012) The Northwestern sample group in this research extends back to graduates from 1991 and reflects a longer-term gender ratio as opposed to the current ratio. It was noted by the Dean of the McCormick School of Engineering at Northwestern University, Julio Ottino, that female enrolment at 35% (double the national average in the U.S.) “surprised” him. (Yang, 2012)

Current Sector of Employment

The vast majority of graduates of the three universities being examined responded that they were working in ‘Engineering’ or ‘Engineering Related Management’. The relevance of this finding is woven into the basic fabric of this research. As mentioned previously, at the core of this research is the desire to examine what effect, if any, choice of location has on graduate outcomes.

As has been mentioned previously, one of reasons engineering was selected as a representative undergraduate degree is transportability. Support of this point is provided in following section: Current Country of Residence (page 49).

Transportability itself is a multi-faceted factor encompassing:
1. Recognition of a qualification across national boarders
2. Strong, stable industries that require a supply of employees that can’t be met locally
3. Sufficiently well-paid positions in the field in the home country and other countries
4. Willingness of graduates to take up jobs in the field
5. Willingness to move to take advantage of opportunities in the field
6. Political willingness to allow or even encourage mobility of workers 16

What has been shown to this point is that engineering graduates from all three universities being examined are securing jobs. They are getting the jobs quickly, the jobs are sufficiently

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16 As discussed above, the US, Australia and Korea are keen to attract foreign engineers but the Korean government provides less opportunity for foreign engineers to migrate
well remunerated to attract graduates, and graduates are mobile, moving across national borders to work and live. This convergence of factors is predicated on the assumption that these engineers will work as engineers and that this level of mobility is closely tied to specific skill shortages. Thus, it is not sufficient to ask the sample groups if they have engineering qualifications. It is also important to ask if they are working in the engineering field. It is not within the scope of this research to explore the relationship between sector of employment and type of degrees graduates hold but one demonstrative example can be given from the *Sydney Morning Herald* providing a contrast with the situation for Law graduates:

“Many of these graduates have already accepted they will not work in law, with only 70 per cent of those surveyed in 2012 working in the legal field. The broader market for lawyers has also contracted, with the number of internet job ads for solicitors falling from a peak of about 6300 a month in mid-2008 to about 1800 a month in mid-2013.

The president of the Law Institute of Victoria, Geoff Bowyer, said law degrees should now be considered a good generalist qualification. “The law degree is changing from being a career-specific [degree] to a broad degree,” he said. "Law degrees are seen in corporate and government as a good base for making good administrative people. Arts used to be seen as that generalist field. In a society where regulation is increasing, being able to [understand it] is a skill.” (Tadros, 2014)

This research demonstrates (Figure 8, below) that 91% to 100% of engineering graduates from these three schools go on to work in the engineering field. This section clearly shows the connection between graduating in engineering, and then going on to work in the engineering field.

*Figure 8 - Current sector of employment of questionnaire respondents*

<table>
<thead>
<tr>
<th></th>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering or Engineering Management</td>
<td>91%</td>
<td>100%</td>
<td>95%</td>
</tr>
</tbody>
</table>
The small minority of graduates not in these two categories identified themselves as working in the building industry, education and product planning (digital displays for electronic devices), all of which, it could be argued, fall under the banner of ‘engineering related’ even if the respondents don’t self-identify as such.

**Current Country of Residence**

This question was intended to examine how the locus of graduation affected where graduates were living and presumably working. In general, it is clear that there is a strong connection between studying in a country and migrating to that country. (Rosenweig, 2008) (Beine, Noel, & Ragot, 2014); What was found in this research supported other findings showing a very strong propensity for students to remain in the country where they graduated. It would seem that commitment to a country in terms undertaking an undergraduate degree has a strong correlation to where graduates gain employment and choose to live. As can be seen in Figure 9 (below), 40% of Korean engineering graduates from the University of Sydney returned to Korea after graduating but 60% remained in Australia. This propensity is even stronger for the U.S. graduates, with 80% staying to live and work in the U.S. Perhaps not surprisingly, the greatest propensity was in Korea with 85% of graduates staying in Korea.

**Figure 9 - Current country of residence for questionnaire respondents**

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australia</td>
<td>Australia</td>
</tr>
<tr>
<td>60%</td>
<td>0</td>
<td>4.8%</td>
</tr>
<tr>
<td>Korea</td>
<td>Korea</td>
<td>Korea</td>
</tr>
<tr>
<td>40%</td>
<td>0</td>
<td>85%</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>U.S.A.</td>
<td>U.S.A.</td>
</tr>
<tr>
<td>0</td>
<td>80%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Other</td>
</tr>
<tr>
<td>0</td>
<td>20%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

*Values for Yonsei to not total 100% due to rounding.

Students, on the whole, don’t choose a country at random but by the same token would not necessarily have a perfectly formed rationale as to why they selected a particular country or institution. At first this might seem a somewhat cavalier approach to such a substantial investment, but with the multitude of variables that can and do impact future life opportunities the best way forward might well be to simply pick a place with a good reputation and an easily accessible support network.

In the seven follow-up interviews with graduates, the deciding factors in choosing between going to the U.S. or Australia or staying at home in Korea primarily hinged on a small
number of variables: family responsibilities, good reputation of the university, family connections or access to a network of friends, or a well-established Korean community. Perhaps, surprisingly, the issue of funding did not feature in the responses from any of the three groups. 17 This finding is supported by Beine et al.:

“Regarding destination specific features, the quality of universities is a significant magnet for foreign students whereas living costs in the destination country play a deterrent effect. The level of tuition fees does not seem to play a significant role.” (Beine, Noel, & Ragot, 2014, p. 24)

In other words, the decision as to where to study is closely linked to the decision of where a student may wish to work and/or live in the future. This inference is supported by the number of foreign graduates who choose to stay on after completing their studies. In Australia, approximately 19% of all foreign graduates remained in the country in 2002. In the U.S.A., 23% of persons with an H-1B visa18 are estimated to have had a prior student visa. For comparison, in Canada between 15% and 20% of international students can be expected to establish themselves and work in the country. In the U.K., 27% of foreign graduates from a U.K. institution of the academic year 2004/05 were employed in the United Kingdom. (OECD, 2008)

The percentages of graduates from the University of Sydney and Northwestern University staying on to work after graduation is far higher than the national averages mentioned above. The differences between national averages and the specific cases of engineering graduates from the three institutions examined in this research can be attributed to demand for engineering graduates in these countries (as discussed above) and the ‘brand value’ these institutions carry into the labour market. Many more than 19% of foreign-born graduates in Australia and the 23% in the U.S. might like to have stayed on, but didn’t have the opportunity due to difficulty in finding appropriate employment. The clear willingness of the U.S. and Australian governments and employers to facilitate engineering graduates in finding

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17 It should be noted tuition fees for the three institution used in this research were very similar.

18 The H-1B visa is the only US visa that can be used for both employment and migration.
jobs and staying in the country where they have studied, speaks of the dependence these countries now have on foreign-born engineers.

**Job Search Locations**

This final question in the quantitative portion of this research bridges the space between the data on where graduates study and where they end up working. At this point the question has to be asked; is there just a natural or even passive path followed by graduates into jobs in the country where they are studying or do they actively seek employment in that place or look for employment options in several locations?

The majority of graduates in this study from Northwestern and Yonsei chose to look for work in their respective country of study only. With what has been seen above regarding the propensity of students to continue to have close association with the country where they have studied, after they graduate, this makes a great deal of sense. Northwestern graduates appeared the most resolute in their commitment to their country of study. Northwestern graduates looked for employment in the U.S. and/or Korea only. No other option was mentioned. Yonsei graduates overwhelming looked for work in Korea only, with a small number looking in the U.S. only. Somewhat surprisingly, two Yonsei respondents reported looking for work in Australia and Korea but none for Australia only. The results for the graduates of the University of Sydney, however, show a difference. One-third of the respondents reported looking in Australia only. Approximately the same number looked in Australia and Korea with the remaining respondents looking in Korea only or Korea and the U.S. These results are interpreted by the researcher as graduates in Korea and the U.S. being more firmly committed to finding work in the country where they graduated than those who graduated in Australia. It is difficult to say why a student would choose this pathway; that is, travel from Korea to Australia to undertake four years of university study, graduate and then choose to either return to Korea or go to the U.S. and make no attempt to look for a job in Australia. Unfortunately, this research doesn’t offer insight into this, somewhat surprising, result but is an area that might well be worth pursuing in subsequent research.
Figure 10 - Responses to: “Where did you look for your first job after graduation?”

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern</th>
<th>Yonsei</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country of study only = 5</td>
<td>Country of study only = 8</td>
<td>Country of study only = 36</td>
</tr>
<tr>
<td>Country of study + Korea = 6</td>
<td>Country of study + Korea = 1</td>
<td></td>
</tr>
<tr>
<td>The U.S. &amp; Korea = 2</td>
<td></td>
<td>U.S. only = 4</td>
</tr>
<tr>
<td>Korea only = 2</td>
<td>Korea only = 1</td>
<td>Australia and Korea = 2</td>
</tr>
</tbody>
</table>

Quantitative Results Summary

One of the major identifiable weaknesses of this research is the relatively small sample size. This weakness has been addressed by careful comparison with relevant national, international and institutional data. Confidence in the results of the small sample size is greatly increased by the high level of consistency found between data from the target cohorts and what is seen in the benchmarking data. With this in mind we can turn to the qualitative data. This includes information from the questionnaire and the seven follow-up interviews. If the major feature of the quantitative data was its similarities, the most noticeable feature of the qualitative data is its differences.
Qualitative Results

Qualitative data was gathered in the following areas:

1. Graduate Expectations
2. Satisfaction with Current Position
3. Factors that Positively Influenced Career Development
4. Factors that Negatively Influenced Career Development
5. Educational Experience and Impact on Career Development
6. Study Destination Choice and Satisfaction
7. Alternatives

The quantitative data above have been valuable in showing the three cohorts of graduates were representative of larger, international student populations and that being an engineering graduate offers access to international mobility. The qualitative data below, in contrast, are notable in their divergence. The graduates of the U.S. and Australian institutions were remarkably similar in their feedback, with the Yonsei graduates providing quite different responses.

Graduate Expectations

Responses to this question provided the first signs of a theme that runs through much of the qualitative data in this research. That is, considerably greater dissatisfaction was expressed by the graduates who stayed in Korea to study, and then work. As seen in Figure 11 (below) there is an increase of about 20% from students who graduated in Korea, to those who graduated in Australia, then another 20% rise to those who graduated in the U.S.

Figure 11 - Responses to the question: “Do you feel your graduate expectations were realistic?”

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Partially</td>
<td>Partially</td>
<td>Partially</td>
</tr>
<tr>
<td>Yes = 60%</td>
<td>Yes = 80%</td>
<td>Yes = 41%</td>
</tr>
<tr>
<td>No = 0</td>
<td>No = 20%</td>
<td>No = 26.8%</td>
</tr>
</tbody>
</table>
After choosing one of the three standard answers (Yes/No/Partially) to this question, there was an opportunity to add an open response. No Northwestern University graduates chose to give any further information. Four University of Sydney graduates gave more detailed answers and nine Yonsei graduates gave further responses. It should be noted that the length of the Yonsei responses was clearly noticeable. The themes for these open responses fell into clear categories.

The Sydney graduates wrote about expecting higher salaries as engineers (2 responses), disappointment at not being able to get work in a particular specialisation as that industry is comparatively small in Australia (1 response) and general disappointment “expected more” (1 response). The Yonsei responses were somewhat different in a number of ways. Initially there was similarity, with some Yonsei graduate responding that they had expected higher salaries as engineers (4 responses). After this initial similarity, the Yonsei responses diverged from those offered by University of Sydney graduates. These included: problems with hierarchical structure at their place of employment (2 responses), lack of development opportunities (2 responses), and general disappointment “My aim and expectations were too high…” (1 response), discord between academic and work performance (1 response), dissatisfaction with early career work demands “My first position was too exhausting” (1 response), and lamenting lack of overseas experience (1 response), and resignation/optimism “I was aware of the history of this sector and I am looking forward to the future…” (1 response).

The clearest message from this data is the higher level of dissatisfaction expressed by the students who stayed in Korea. When the non-‘Yes’ responses (i.e. ‘No’ + ‘Partially’) are combined Sydney = 40% (though it must be noted there were no “No” responses), Northwestern totals 20% (equally it must be noted there were no “Partially” responses) but Yonsei has 57% that did not respond ‘Yes’ to this question. Further discussion on this point will be included below in combination with the results of other questions.

**Satisfaction with Current Position**

When asked this question on satisfaction with their current position, the majority of respondents from all three universities gave positive responses, selecting either “OK”,
“Satisfied” or “Very Satisfied”. The ratios between the 5 options, however, varied widely between the respondents from the three different institutions as can be seen below in Figure 12.

**Figure 12 - Responses to the question: “How would you rate your satisfaction with your current job?”**

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Very Unsatisfied</td>
<td>0 Very Unsatisfied</td>
<td>0 Very Unsatisfied</td>
</tr>
<tr>
<td>1 Unsatisfied (7%)</td>
<td>0 Unsatisfied</td>
<td>3 Unsatisfied (7.5%)</td>
</tr>
<tr>
<td>5 OK (33%)</td>
<td>3 OK (30%)</td>
<td>18 OK (44%)</td>
</tr>
<tr>
<td>8 Satisfied (53%)</td>
<td>7 Satisfied (70%)</td>
<td>18 Satisfied (44%)</td>
</tr>
<tr>
<td>1 Very Satisfied (7%)</td>
<td>0 Very Satisfied</td>
<td>2 Very Satisfied (5%)</td>
</tr>
</tbody>
</table>

OK + Satisfied + Very Satisfied = 93%
OK + Satisfied + Very Satisfied = 100%
OK + Satisfied + Very Satisfied = 92.5%

*Please note percentage for Yonsei do not total 100% due to rounding of values

In the open text, supplementary section for this question, again, Northwestern graduates gave no further answer. Two Sydney and three Yonsei graduates responded. The Sydney graduates added, “companies prefer American degrees rather than Australian” and “not enough salary”. The Yonsei graduates responded “I feel I am not a human being but rather a mere cog in the larger machine”, “I am satisfied with my working life but I feel it hard to communicate with co-workers” and “I don't like my supervisor”.

The tone of the Yonsei responses appears more personal, sombre and dissatisfied than the comparatively dispassionate, functional responses of the Sydney graduates. Answers from the structured section of this question for the three cohorts are fairly similar with their reported happiness but the open text section reveals the aforementioned theme of greater unhappiness expressed by portions of the Yonsei cohort.

**Factors that Positively Influenced Career Development**

The purpose of this question was to explore if there were any notable differences between the three groups in terms of what had influenced their career development. The overall hierarchy of the seven options provided, showed a high level of consistency among the three groups of respondents. The three least selected options were identical in rankings. In addition, the ‘Communication skills’ option was the second or equal-second ranked choice for all three groups. Further consistency can be seen with the ‘Professional knowledge’ option ranking either first, second or equal second for all three cohorts.
Figure 13 - Three choices responses for: “Please identify the top three factors that have influenced your career development”

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning abilities=10</td>
<td>Professional knowledge=8</td>
<td>Professional knowledge=35</td>
</tr>
<tr>
<td>Communication skills=9</td>
<td>Communication skills=6</td>
<td>Communication skills=32</td>
</tr>
<tr>
<td>Professional knowledge=9</td>
<td>Teamwork=5</td>
<td>Learning abilities=31</td>
</tr>
<tr>
<td>Teamwork=6</td>
<td>Learning abilities=4</td>
<td>Teamwork=16</td>
</tr>
<tr>
<td>International experience=5</td>
<td>International experience=3</td>
<td>International experience=6</td>
</tr>
<tr>
<td>Foreign language ability=3</td>
<td>Foreign language ability=3</td>
<td>Foreign language ability=3</td>
</tr>
<tr>
<td>Gender=1</td>
<td>Gender=1</td>
<td>Gender=2</td>
</tr>
</tbody>
</table>

Open text responses were also permitted with this question. Again, Northwestern graduates added nothing. Two University of Sydney respondents added, ‘Attitude’ and ‘Workmanship’. One Yonsei respondent added “your degree”. The very small number of open text responses without any apparent unifying themes and the constancy of the choice in the standard responses, would lead to the inference that the same types of skills are regarded as being of similar value, regardless of location of education or employment. This again adds strength to the contention that any differences in other graduate outcomes are not related to the type of skills expected by employers in the different countries or an inability of the education provider to equip students with these skills. In other words, the choice of location doesn’t appear to significantly affect the graduates’ ability to do their job effectively.

One of the options for this question was ‘Gender’. Of the four respondents who listed their gender as a positive in this question; three were male and one was female. Of the male respondents, two were Yonsei graduates living and working in Korea and the third was a Northwestern graduate living and working in the U.S. The sole female respondent was University of Sydney graduate living and working in Sydney. As has been pointed out in the Methodology section (Chapter 3) there is a chronic gender imbalance in engineering. It is not goal of this research to examine or address this situation, however, it is of interest that so few respondents, male or female, highlighted gender as a positive effect in this question or as a negative in the following question and that no respondents made mention of it in the final open-ended question. Only one (purposive) follow-up interview was carried out with a female respondent. She was a Yonsei graduate living and working in Korea. When the issue
of gender was raised she was very clear in her response that at least in her company (the engineering arm of a highly prestigious, internationally known Korean chaebol) gender made no difference to a staff member’s opportunities or career advancement. She pointed out that there were “a fair amount” of female engineers in her company at a variety of levels. She went on to explain that the major career-limiting element in her company was the willingness to spend extended periods of time (up to a year) working “on-site”. Most of these assignments were in rural/remote parts of Korea or in the Middle-East. She pointed out that to avoid become “just a desk engineer” (a career-limiting position) one needed to have as large and diverse a range of practical project experience in the field as possible.

Factors that Negatively Influenced Career Development

The purpose of this question was to counter balance the previous question. It is an attempt to elicit the elements of the graduate’s chosen study path that they believe have been limiting or detrimental. The results (Figure 14 below) show, surprisingly, that one Yonsei graduate selected the ‘Hard to fit back into Korean Society’ option. It was expected that, as Yonsei graduates were in their home country for their studies, that readjustment would not be an issue. As this is only one response it could reasonably be assumed that it may have been a selection error or that this particular graduate felt outside his home culture for some unknown reason. The response rate for the Sydney and Northwestern graduates for the same option was higher, as might be expected, for students who had spent at least 4 years outside their home culture. The next option “Difficult to navigate between two cultures” was of interest in that no Sydney or Northwestern graduates selected this option. It is assumed that, as part of their time in spent in the U.S. or Australia, they were furnished with an understanding of and the skills to deal with cultural differences. In contrast, the number of Yonsei respondents selecting this option, is consistent with results seen throughout this study. At least a proportion of these graduates felt they lacked the skills to deal with intercultural situations. The most common option selected within this question for all three cohorts; ‘Not at all’, again supports the contention that the majority of graduates of the three universities examined in this study are satisfied with the experiences they had at their alma mater and how those experiences prepared them for their later lives.
Responses for the option ‘I have experienced racism’ were very interesting in so far as the only two responses were from University of Sydney graduates. The prevalence and/or impact of racism are not within the scope of this study, but this result certainly stands out as a concern for international students choosing Australia as a study destination. Obviously, the Yonsei cohort would not be expected to report any racism, as they had remained within their own country and culture.

Another surprising set of responses concerns the selection of the response ‘My qualifications were not fully recognized’. As is outlined above in the Quantitative section of this chapter, engineers are actively sought after in most developed economies. This is evidenced by the preferential migration and working rights policies in Australia, Korea, the U.S. and other developed economies. In addition, the standard four-year format of undergraduate engineering degrees, outlined in Methodology section (Chapter 3), across most universities increases the transportability and cross-jurisdictional recognition of engineering degrees. Despite all of the aforementioned, two respondents from the University of Sydney and two from Northwestern, as well as four Yonsei respondents, reported having problems with recognition of their qualification. Open text responses were also offered as an option with this question, but two of the three respondents choosing this option gave no further details. The one respondent who provided further information described difficulties matching his degree with a relevant job and lamenting the poor grades he received. These responses provide an imperfect understanding of what type of recognition issues these graduates faced. It can be speculated that issues could include difficulty in moving from one area of engineering to another or issues facing graduates with poor grades. There are countless other possible interpretations of these responses, however, to gain greater clarity in this area further research would need to be undertaken to explore this serious issue that is apparently impacting the employment outcomes of a proportion of the respondents from all three cohorts.
Figure 14 - Responses to the question: “In what way has your chosen education and experience impeded your career, if at all?”

<table>
<thead>
<tr>
<th></th>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard to fit back into Korean Society</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Difficult to navigate between two cultures</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>I have experienced racism</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>My qualifications were not fully recognized</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Not at all</td>
<td>5</td>
<td>6</td>
<td>27</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Educational Experience and Impact on Career Development

Responses to this question were almost identical for the U.S. and Australian educated graduates, however, a very different profile emerged when Korean and non-Korean educated cohorts were compared. The responses indicate that all three groups were in overwhelming agreement that they had received a high-quality education and that this type of education had the greatest impact on their career development. It is worth noting that respondents choosing the ‘No impact at all’ option were more likely to be Yonsei graduates than graduates of either of the other two institutions. By itself this might not be remarkable, but it seems to support the pattern seen in other parts of this research that there are higher levels of dissatisfaction among Yonsei graduates, even if the majority agree they have received a high-quality educational experience.

Figure 15 - Responses to the question: “In what way has your chosen education and experience assisted your career development (if at all?)”

<table>
<thead>
<tr>
<th></th>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rank</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High quality education (teaching &amp; learning) =5</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>International exposure, experience and social contacts = 3</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>English language ability = 3</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Study environment = 1</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>An ability to research and learn = 1</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>No impact at all =1</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
The University of Sydney and Northwestern respondents chose to make no comments via the open text option but again Yonsei graduates took the opportunity to provide further information, adding the following:

1. Real-world project management experience
2. Working or studying in a high-specialised environment
3. Increased knowledge in area of specialisation
4. Undertaking more study at a private learning institute to increase knowledge

The phrasing of the question was intended to elicit positive responses, so it is not surprising that the responses that were offered were all to do with positive aspects of their studies but it is still noteworthy that the Yonsei graduates alone chose to provide added feedback.

**Study Destination Choice and Satisfaction**

When a more specific question related to satisfaction with study destination was asked, the response profile follows a similar pattern to that seen in Figure 11 for the question; ‘Do You Feel Your Gradate Expectations Were Realistic?’ Responses in Figure 16 (below) show incremental increases in ‘Yes’ responses, from Yonsei at the bottom to Sydney in the middle and Northwestern at the top. The ‘No’ responses also follow a similar pattern, with 27% Yonsei graduates expressing dissatisfaction as opposed to 13% of Sydney graduates and zero expressions of any dissatisfaction from Northwestern graduates. Possibly the most relevant piece of information from this question is that approximately half of the Yonsei graduates were completely happy with their experiences and about half were either partially happy or unhappy. This is in contrast to 100% of Northwestern graduates and 73% of Sydney graduates reporting expressing happiness with their choice.

**Figure 16 - Responses to: “Are you happy with your choice of study destination?”**

<table>
<thead>
<tr>
<th>University of Sydney</th>
<th>Northwestern University</th>
<th>Yonsei University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes = 11</td>
<td>Yes = 10</td>
<td>Yes = 21</td>
</tr>
<tr>
<td>No = 2</td>
<td>No = 0</td>
<td>No = 11</td>
</tr>
<tr>
<td>Partially = 2</td>
<td>Partially = 0</td>
<td>Partially = 9</td>
</tr>
<tr>
<td>Yes = 73%</td>
<td>Yes = 100%</td>
<td>Yes = 51%</td>
</tr>
<tr>
<td>No = 13%</td>
<td>No = 0%</td>
<td>No = 27%</td>
</tr>
<tr>
<td>Partially = 13%</td>
<td>Partially 0%</td>
<td>Partially = 22%</td>
</tr>
</tbody>
</table>

*Please note percentages for Sydney do not total 100% due to rounding of values*
Alternatives

This was the final question in the questionnaire and the only completely open question. When asked: What would you do differently? The majority of respondents chose to make a comment of some type (64 of 67 responds made a response to this question). As with most of the qualitative data, responses from the U.S. and Australian institutions displayed similar themes. Graduates who stayed in Korea responded with the same themes as the other two groups but additional themes emerged and were more forcefully stated. From the University of Sydney cohort, the responses most frequently given were that they would make no change or they would like to have studied harder. Two respondents wished that they had chosen to study in the U.S. but provided no detail as to why. Single responses from the Sydney group included; wanting to change the order of study and military service, wanting to specialise, wanting to get more work experience while studying and expressing a desire to look for a job in Australia rather than returning to Korea. The Northwestern graduates also commonly stated they would change nothing. Those who replied that they did want to change expressed a desire to change their major within the engineering field. One Northwestern respondent wanted to study something other than engineering and one stated that he would have preferred to do his undergraduate studies in Korea and then done his MBA in the U.S. rather than the other way around. The case for Yonsei was strikingly different. The most common response to this question was that they wished they had gone overseas and/or studied a foreign language. The second most common answer was that they would like to change their studies and move away from engineering. The third most common response was that they would change nothing. Three respondents stated they would like to have specialised. Three others would like to have added a second major to their studies or had a studied a broader range of subjects. Two graduates stated they wished they had studied harder.

Qualitative Results Summary

The clear and consistent theme running through the qualitative data in this research is that there is a much higher prevalence of dissatisfaction reported by graduates who stayed in Korea. The second, less pronounced, theme is that satisfaction levels are slightly, but consistently higher among the Korean graduates who chose the U.S. as opposed to those who
chose Australia. Those studying in Australia would often look to the U.S. as another option for work but those who studied in the U.S. did not list Australia as an alternative.

The obvious questions that need to be asked next are:

1. Why is there such a difference in the levels of satisfaction between those who stayed in Korea and those who chose to go to Australia or the U.S?

2. Why are the graduates of the U.S. institution more satisfied (albeit marginally) than the graduates of the Australian institution?

The answer to the first question is complex and has a great deal to do with perceived erosion of the social status of the engineer, and engineering as a profession, in Korea. As was mentioned Quantitative Results section of this document, Korea produces, proportionally, a far greater number of engineers than does the U.S. or Australia. Does a greater number of engineering graduates mean an oversupply of engineering graduates and therefore higher rates of unemployment of engineers in Korea? The answer is a definite ‘No’. Unemployment rates for engineers in Korea, Australia and the U.S., are lower than the national unemployment rate of these countries. This can be easily shown statistically for Australia and the U.S. and ample anecdotal evidence can be found for Korea.

**Figure 17 - Comparative rates of national unemployment and unemployment of engineers by country**

<table>
<thead>
<tr>
<th>Country</th>
<th>National Unemployment Rate</th>
<th>Unemployment Rate for Engineers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>5.6%†</td>
<td>3.0%*</td>
</tr>
<tr>
<td>Korea</td>
<td>3.1%†</td>
<td>N/A~</td>
</tr>
<tr>
<td>U.S.</td>
<td>7.3%†</td>
<td>6.0%‡</td>
</tr>
</tbody>
</table>

†OECD Harmonised Unemployment Rate (HUR) 2013
~No statistics are released on unemployment by sector in Korea but there is evidence of high levels of employment among Korean engineers in Korea (Thompson, 2013), (Yun, 2014)
‡Wall Street Journal Online (Wall Street Journal Online, 2013)

In fact, Korean engineers have the advantage of an essentially ‘closed shop’ in their home labour market with minimal importation of highly-skilled foreign engineers19. Imported

19 Some efforts have been made by the Korean government to recruit highly skilled workers to migrate to Korea such as the ‘500 Return Program’ but as the name suggests the main goal of this program was to tap the Korean
workers, who are not ethnically Korean, tend to be allowed into Korea for limited periods of time and are not encouraged to stay beyond what is needed in terms of their employment. These workers are typically from developing countries and given so called ‘3D’ (dirty, dangerous & difficult) jobs (Mundy, 2013). Foreign workers in Korea are discouraged from putting down roots, with spouses (normally wives) and families rarely permitted to accompany the worker. Visas and work contracts are deliberately issued with duration too short to give access to Korean permanent residency or citizenship (Mundy, 2013). This home advantage is coupled with positive discrimination policies in place in many developed countries. These policies are specifically aimed at encouraging highly-skilled engineers (among other professionals) to move to that country for work with the opportunity to become permanent residents or citizens. In Australia, for example, the Department of Immigration and Border Protection’s ‘Skilled Occupation List’ (SOL) includes 191 occupation categories that the Australian government has deemed eligible for Independent or Family Sponsored Points Tested visas or Temporary Graduate (subclass 485) – Graduate Work Stream. Of these, 28 occupation categories (approximately 15%) were engineering occupations (Immigration and Border Protection, 2014). Successful applications included 792 visas for engineering roles (approximately 21%) under this program, of a total of 3,761 (Department of Immigration and Border Protection, 2014). The U.S. situation is similar with 85,000 foreign workers a year accessing employment (often leading to citizenship) through the H-1B visa classification. The Information Technology (IT) industry takes a major proportion of these visas but engineers feature prominently. See Figure 18 below.

diaspora and encourage high skilled ethnic Koreans to return to Korea. This was intended to stimulate research rather be of direct application to industry.

20 Accessed 24 August 2014
21 Please note: There are other skilled and unskilled pathways engineers and those from other occupations (or of no occupation) use to migrate to Australia.
22 Including 65,000 visas per year (capped) and 20,000 addition visas reserved for foreign graduates of U.S. college (uncapped).
23 The H-1B visa is the only ‘dual purpose’ visa for the U.S. combining the opportunity to work and a pathway for migration.
The policies and figures outlined above clearly show foreign engineers are targeted, have a range of opportunities to work and live in the U.S. and Australia, and have improved opportunities for migration. As was also mentioned above, Korean engineers have the advantage of employment opportunities in Australia and the U.S., should they choose to access them, and a strong, almost closed job market in Korea. This leaves the question, why are so many Yonsei engineering graduate reporting being unhappy as engineers? If the cause of the apparent unhappiness among Korean engineers is not to be found in employment rates or employment opportunities, is it related to income? The answer here is probably, also, ‘No’\textsuperscript{24}. Rather than income being the issue it would seem that this unhappiness is more closely related to the perceived erosion of the social status of engineering in Korea.

To highlight the prevailing sentiment towards engineering in Korea, Han (2010) highlights two, contradictory points from a Korean Income Panel Study.

1. Drawing from the Soomyung Jang and Haeae Seo of the Korean Income Panel Study (Han’guk-nodong- p’aenol-josa) Han points out:

   “While the economic status of science and engineers majors has been deteriorated…” further explanation is given that “…medical majors have

\textsuperscript{24} The Korean government does not release income data disaggregated by profession.
been better than before, which seems to attract many high achievers of high school graduates.” (Han, 2010 p. 129)

2. Drawing from a different member of the same panel in the same paper, (economist Ryoo Jaewoo) an alternative position is expressed:

“…no comparative income changes in the science and engineering workforce took place during the same period…” (Han, 2010 p. 130)

These contradictory positions can exist simultaneously, as the Korean government does not release definitive income or unemployment data disaggregated by profession. Han and Downey (Han & Downey, 2014) explain this contradiction, not in terms of income or employment opportunity but social prestige. In the absence of hard data, anecdotal evidence helps fill the void. Han and Downey postulate that, in Korea, there has probably been an increase in the income of doctors over the past few years, beyond inflation and other categories of employment. There is also the impression that those working in the field of finance may also have seen similar increases in income over the same period. The income of engineers has probably kept pace with inflation and is comparable to the income of engineers in comparable countries, for example the OECD group. What is then experienced by engineers is a combination of seeing income levels in other disciplines rise faster than the average income of engineers combined with erosion in social status. Han and Downey’s position is supported by a recent article in the influential daily newspaper the Chosun Ilbo. The article is titled “Which ones do you think have better chance to get employed - tech graduates from a regional university or graduates from the business school of a top university? I surely say the tech grads do.” (Yun, 2014)

This article was based on an anonymous on-line piece titled A tip from a HR specialist with 18 years of experience, that went ‘viral’ through Korean social media. The Chosun Ilbo article reports:

“The author says tech/engineering grads get more chance of employment in Korea because the country's economy is still manufacturing oriented and demand for engineers never ends.
Among all the tech courses, he recommends either mechanical engineering or electrical engineering. He asserted getting a job is never a concern to a grad from one of these two courses. The only downside is he or she is required to undergo on-the-job training for a few years in a production-line facility away from Seoul.”

It is clear that there are jobs for engineers in Korea, and many of these jobs are with the prestigious and well-paying chaebol. This then brings us back to Han and Downey’s position that the root of unhappiness is not economic but a decline in social status. An illuminating comparison between the past and present is made in their book *Engineers for Korea* (Han & Downey, 2014). During his presidency, Park Chung-hee (1917-1979, in office 1962-1979) visited the Korean Institute of Science and Technology (KIST) regularly. In the words of Dr. Choi Hyung-sub, the first head of the KIST:

“President Park …came to the research institute once or twice a month to converse with the researchers.” (Han & Downey, 2014, p. 92)

These visits reportedly:

“…raised our pride and social standing across the administration.” (Han & Downey, 2014, p. 92)

Han and Downey go on to point out:

“This influence was unimaginably significant across a territory in which personal recognition from one’s leader had since the Joseon period [1392–1897] not only conveyed endorsement but also granted legitimacy.” (Han & Downey, 2014, p. 92)

This was in contrast to the fact that for most of Korea’s long history where:

“Technical workers had long been subordinate to classically trained scholar officials.” (Han & Downey, 2014, p. x)
The beginning of the end of the golden era for engineers in Korea was marked by Park’s assassination. The slow but clear shift towards a freer, less government directed economy took focus away from engineers and the heavy industries that created the so-called ‘Miracle on the Han’. The post-Park era gradually became focused on the family-owned business groups known as ‘chaebol’. These companies, with names such as Samsung, Hyundai and LG, have enjoyed success to the point of entering the international lexicon. This phase of Korean societal evolution slowly but seemingly inexorably began to exalt the businessman over the engineer. Han and Downy contend that it is this change in social status, rather than a decrease in income or lack of employment opportunities that accounts for higher rates of reported unhappiness of engineers in Korea. Regardless of the origin of this change in perception, the effect is very clearly seen in changing enrolment patterns in Korean universities. The change was seen as early as 2002 when:

“…more than 18% of offers that went out to prospective [engineering] students came back declined. The best students were moving to medicine, which offered both high status and economic security.” (Han & Downey, 2014, p. 133)

In short, to meet the particular demands of the heavily government guided economy, Korea has produced a large number of engineers in comparison to other industrialised countries (as outlined in the Quantitative Results section of this document), however, many engineers felt, and continue to feel, the rug is slowly being pulled out from under them. They believe they have been betrayed, as they watch some other professions rise above them in terms of social status. Koreans who move outside Korea for study and work, for example those studying in the U.S. or Australia, are removed from Korean engineering culture and thus feel more fulfilled as exceptions align more closely with outcomes. This gives the clearest explanation of why, with such similar quantitative graduate outcomes, there is such clear divergence in qualitative data between students who studied in Korea and those who chose, or had the opportunity, to study outside Korea.

This gives us an answer to the first question from above: Why is there such a difference in the levels of satisfaction between those who stayed in Korea and those who chose to go to
Australia or the U.S.? This still leaves the second question: Why are the graduates of the U.S. institution more satisfied (albeit marginally) than the graduates of the Australian institution? This second question takes us back closer to the main thrust of this investigation; what is the difference in graduate outcomes of Korean international students who choose to study in the U.S. as compared to Australia. The results of this research show that in terms of employment, the opportunity to migrate, and income, and general satisfaction, choosing either the U.S. or Australia will, on average, be a similar, very positive choice. If outcomes are so similar, why do international students in Australia consider going to the U.S. but international students in the U.S. do not consider Australia, or any other country for that matter?

There is no hard evidence from this research but in terms of the dominance and attractiveness of the U.S. higher education, Altbach points out in his aptly titled paper – *Globalization and the University: Myths and Realities in an Unequal World* (Altbach, 2005)

> “Globalization poses special challenges—and responsibilities—for Americans. The United States, with the world’s dominant academic system, provides a model that other countries carefully study. American academic thinking today influences practice in other countries tomorrow. If we divide higher education into academic centers and peripheries, the United States is by far the most important center.” (Altbach, 2005)

Altbach is making reference to the U.S. higher education sector in isolation and although what he has written is unarguably true, it is not the whole story when it comes to the proven, long-term ability of the U.S. to attract international students. The same power to attract is expressed in broader terms by Nye in his work on, soft power and higher education. Nye cites a former French foreign Minister’s thoughts on the drawing power of U.S. higher education. The Minister observed that Americans are powerful because they can “inspire the dreams and desires of others, thanks to the mastery of global images through film and television and because, for these same reasons, large numbers of students from other countries come to the United States to finish their studies.” (Nye, 2005) Although difficult to measure, it must be assumed that the effect of the U.S. still being preeminent economically, militarily and dominating the sphere of international education puts it front of mind and is, therefore, aspirational beyond questions of measureable return on investment.
Bringing together the quantitative and qualitative results it is possible to start shedding light on the impact of overseas on graduates. This ‘mixed methods’ approach is intended to tell as much of this story as possible, providing data on common economic metrics while at the same time asking graduates to tell of their own experiences. The patterns that emerge go at least some way to addressing some of the gaps in the literature on the graduate outcomes of international students.
Chapter 5 Conclusion

Introduction

As stated throughout this research, the core of this study is an attempt to better understand the graduate outcomes of international students in light of choice of destination of study. There is considerable literature examining many facets of graduate outcomes. Despite the depth and breadth of this body of work there seems to be a silence regarding seemingly simple questions such as; Am I better off to study in the U.S. or Australia? The goal of this study is to provide empirical evidence intended to address this gap and help provide meaningful answers to such questions. It is hoped that this study will be of service to students, parents and university staff as well as making a contribution to the academic discussion around graduate outcomes.

As mentioned previously, this study is somewhat unusual in that it examines three cohorts of graduates, all of whom are from the same country, Korea, who completed four-year Bachelor of Engineering qualifications at top-tier universities and found jobs. However, choice of country of study was the key focus; hence members of these three cohorts differed according to the country in which they undertook their studies. One group chose the U.S., another Australia and the third stayed at home in Korea25. Through this study, the researcher set out to discover what difference this one choice made in graduates’ lives. It is hoped that this work may help guide students, parents, college counsellors and university staff when facing the choice of one path over others.

There are two bodies of academic work examining graduate outcomes that are similar to the research done in this study. The first examines returnee outcomes by comparing them with local graduates. Much of this work focuses on groups from the ‘Global South’ or ‘Periphery’ gaining awards in the ‘Global North’ or ‘Centre’ and returning home. The consistent theme running through much of this research is that a premium often accrues to those who gain tertiary awards in this way and return home, however, these rewards diminish as the local

25 This final group can be considered the ‘control group’ of this study.
economy develops and the number of overseas qualified graduates entering the workforce increases. Most of this work adheres to patterns familiar in classical supply/demand economics. The second body of work looks at migration/return rates of international graduates. Most of this work examines the flow of graduates either between countries or globally. Such work employs terms such as ‘Brain Drain’, ‘Brain Circulation’, and ‘Brain Return’ and so on, but does not tend to examine the differences in graduate outcomes according to where the student chose to undertake studies, i.e. the U.K. versus the U.S., Australia versus Canada, etc. It is hoped that data presented in this study adds to the existing literature on graduate outcomes by looking at these outcomes from a new and different perspective.

Summary of the Findings

The key findings of this study are that despite very modest, but consistent advantages seen in the graduate outcomes of students who chose to study in the world’s only current superpower (the U.S.), these advantages are almost negligible if compared to outcomes of a similar cohort of graduates from a comparable institution in another developed country, in this case Australia. Reassuringly, there was a very high level of consistency in the skills and experiences graduates reported to be of greatest value to them during their studies and in the workplace after graduation. In addition, all three cohorts reported earning comparable incomes and found employment after graduation at similar rates. Moreover, income levels, when compared to averages in these three countries and against OECD averages, also showed a great deal of consistency. These factors combined would indicate that all the graduates in this study received high-quality education experiences while at their alma mater, whether it be in Korea, Australia or the U.S. This consistency increases confidence that the cohorts were well matched in terms of the perceived prestige their respective undergraduate qualifications afforded them in their careers. As outlined in Chapter 3 (Methodology), the three universities were deliberately selected as having broadly matching characteristics in the areas of: ranking, age, size, structure and research intensity.

Research in a relatively unexplored area will often turn up unexpected results. This is certainly the case for this study. The focus of this study was to investigate differences, if any, between cohorts of students choosing to study in the U.S. and in Australia, using students
who stayed as home as a type of control group. While there was little variation in the results seen between the U.S. and Australian cohorts, a marked difference was found in the results gathered from the cohort that did not undertake their studies abroad. In particular, qualitative results examining work and life satisfaction showed the cohort which remained in Korea often expressing quite extreme self-reported levels of unhappiness with their graduate outcomes, both in terms of satisfaction with their current life and regret in not spending at least some time studying outside their home country. This is all despite evidence that Korean graduates in Korea have access to a strong domestic job market, get jobs more quickly than Korean graduates in the U.S. or Australia, and are earning incomes comparable with the average income of most other professional graduates in Korea and engineering counterparts overseas. At least some of this, often strongly expressed, dissatisfaction can be attributed to changes in the perceived social status of engineers in Korea over the course of its industrial, social and economic development since the 1960’s, but regardless of cause, it can be shown through this research, that spending time studying outside one’s home country increases levels of satisfaction after graduation.

The impact of gender is not an issue central to this study, however, one question touched on related factors influencing career advancement (see page 56). With engineering’s well known male profile in mind, it was somewhat surprising to the researcher to see so little mention of it as an issue with either male or female respondents in the questionnaire or in the follow up interviews. This lack of response, despite a quite obvious and chronic gender imbalance, may be attributable to the socialisation of the engineering profession. It is possible that this imbalance has been prevalent for so long that it has become accepted as ‘normal’. Likewise racism, though not a key feature of this study, did feature in the same question as gender mentioned above. Two University of Sydney graduates reported that racism had been an impediment, but there was no additional information provided as to how this affected these graduates.

With the results of this study in hand, the researcher will now be equipped to respond to questions related to the expected outcomes of choosing to study in the U.S. or Australia, but perhaps more importantly, will also be able to advise students that studying at a good university outside their own culture offers personal and professional rewards that may be enjoyed throughout their lives. Students, parents and administrators can draw from the
research that, at least in the case of Korean students undertaking undergraduate Engineering courses, there is little difference in career and personal outcomes when choosing between the U.S. and Australia. As the comparison of data from this research to large national and regional data sets yielded consistent results, it is suggested that these results could conceivably have generalizability for a wider range of disciples of study and country of origin. Armed with that knowledge, greater consideration could be focused on other factors such as ‘best fit’ between the institution and the individual student. Although there is little appreciable difference in outcome when choosing between the U.S. and Australia, what can also be seen is that Korean students who complete studies outside their home country appear to be, on average, more satisfied with their personal and professional lives.

**Limitations and Future Directions**

The three most pronounced limitations for this research are a) the relatively small sample sizes, b) restrictions associated with using a group of graduates from only one country, i.e. Korean graduates, and c) using a degree that has a heavily gendered student/graduate profile, (Engineering). As outlined in the Methodology section, these limitations are addressed by comparing data gathered in this research against large, highly-respected national and multinational data sets and purposive sampling to ensure as high a level of data reliability as possible.

Recommendations for future research address the above-mentioned limitations with the goal of increasing confidence that the results seen in this study are indeed indicative of wider trends or not. Variables such as; type and level of degree, locus of study, recognition of qualifications and country of origin could be expanded and, in addition, outcomes of graduates from a broader range of educational institutions could be introduced. In addition, the issues of the effect of the strong male gender profile in engineering could be further examined and the relative prevalence and effects of racism among students studying abroad.

As outlined in Chapter 2, the use of a human capital theory framework is a limitation of this study. Although a valid choice, it arguably places the results of this research within the structuralist tradition. Other frameworks might well have yielded alternative accounts, and given that the underlying validity of this framework is contested by several alternative
positions (as seen in Chapter 2), most notably Marxist and post-structuralist frameworks, it would be of great interest to revisit the core themes of this research from alternative perspectives.
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Yun, H. (2014, March 15). *Who do you think has a better chance of being employed - tech graduates from a regional university outside of Seoul or the graduates of the business schools of the top universities? I can say with confidence it is the tech graduates*. Retrieved from The Chosun Ilbo Online:
http://news.chosun.com/site/data/html_dir/2014/03/15/2014031501341.html?Dep 0=twitter
Appendix A: Questionnaire

Dear graduate,

Thank you for your support of this research.

The purpose of this research is to investigate what differences, if any, exist between graduates of Australian, American and Korean universities.

Survey results will be kept by the researcher for and not shared with any third party. Please feel free to contact the researcher at chris.lawrance@sydney.edu.au if you have any questions.

As responses to this questionnaire are anonymous it will not be possible for an individual’s responses to be withdrawn once submitted.

The data gathered from this research will be used as part of the thesis of a Masters of Education (Research) at the University of Sydney.

Thank you for taking the time to complete this survey.

1. Gender
   Male
   Female

2. Age
   20s
   30s
   40s
   50s and above

3. Where do you currently live?

4. From which university did you graduate with a bachelor degree (undergraduate degree) in engineering?

5. Which year did you graduate?

6. How would you describe your current employment status?
   Full-time paid employment
   Part-time paid employment
   Self-employed
   Volunteer work
   Unemployed/Still seeking job
   Transition between jobs

7. The field (industry) in which you currently work:
   Engineering/Engineering related
8. What is your current position in the company?
   Director General or equivalent
   Senior Manager or similar level
   Manager or similar level
   Employee
   Owner

9. What is your current annual earned income?
   Below $40,000 USD
   $40,001 – $60,000
   $60,001 – $80,000
   $80,001 – $100,000
   Above $100,000

10. How would you rate your satisfaction with your current job?
    Very satisfied
    Satisfied
    OK
    Unsatisfied
    Very Unsatisfied

    Please describe why you feel this way __________________________

11. How long did it take to find employment after you graduated from your undergraduate degree?
    0 to 1 month (please go to question 13)
    1 to 3 months (please go to question 13)
    3 to 6 months (please go to question 13)
    6 to 12 months (please go to question 13)
    12 months or more (please go to question 13)
    Didn’t look for work immediately (please go to question 13)
    Unemployed and looking for work (please go to question 12)

12. If you are currently unemployed or still seeking a job, what is/are the reason(s)?
    Have not had any offers yet
    Have not had the right offer yet
    No opportunities in my field
    My degree did not give me the right blend of skills
    Other – please specify.

13. Looking back, do you think your expectations of job and salary were realistic?
    Yes
    No
    Partially - Please explain ________________________________
14. Where did you look for your first job after graduation from your undergraduate degree?
   - Australia only
   - Australia and Korea
   - Korea only
   - The US only
   - Other _________________________________________________________

15. In what way has your chosen education and experience assisted your career development (if at all)?
   - High quality education (teaching & learning)
   - English language ability
   - International exposure, experience and social contacts
   - Study environment
   - An ability to research and learn
   - No impact at all
   - Other

16. Please identify the top 3 key factors that have influenced your career development
   - Professional knowledge
   - Communication skills
   - Learning abilities
   - International experience
   - Teamwork
   - Gender
   - Foreign Language ability
   - Other - Please explain ____________________________________________

17. Are you happy with your choice of study destination?
   - Yes
   - No
   - Partially - Please explain _________________________________________

18. In what way has your chosen education and experience impeded your career development (if at all)?
   - Hard to fit back into Korean society
   - Difficult to navigate between two cultures
   - I have experienced racism
   - My qualifications were not fully recognised
   - Not at all
   - Other reasons - Please explain ______________________________________

19. What, if anything would you do differently, if you had the chance again?

   ~ End ~

Thank you for completing this questionnaire.
If you wish to make yourself available for a follow-up interview for this research please provide your contact details below.

Name: ______________________
E-mail: _____________________
Phone: ______________________
Appendix B: Information Statement

Participant Information Statement

Faculty of Education and Social Work

Supervisor: University of Sydney
Professor Anthony Welch ☑ + 61 2 9351 3175
Email: anthony.welch@sydney.edu.au

Researcher: University of Sydney
Mr. Chris Lawrance ☑ + 61 2 86278310
Email: Chris.lawrance@sydney.edu.au

Title

What is the relative advantage of an Australian tertiary degree to returnee and migrant Korean students, compared to American and Korean tertiary degrees?

1. Purpose of this Study
   As a Korean university graduate you are invited to participate in a study examining the effects of location on graduate outcomes. This research will investigate how (if at all) the choice of location of university studies impacts graduates.

2. Relevant University of Sydney Staff and Student
   This research will be undertaken by Mr. Chris Lawrance and will form the basis for the degree of Master of Education (Research) under the supervision of Professor Anthony Welch and Dr. Ruth Phillips at the Faculty of Education and Social Work, University of Sydney. This research has received ethics approval from the Human Research Ethics Committee of the University of Sydney.

3. Commitment Requirements for Participants
   The interview will consist of three questions. Participants will be asked about their experiences at university and what effect they feel their choice of location for their education had on their graduate outcomes.

   The interview will be recorded with your written consent. All information will be kept, by the researcher in the strictest of confidence and not shared with any other party.

   The interview is expected to take between 20 and 30 minutes.
4. **Withdrawal**
   You may withdraw from this research at any time. If you do choose to withdraw, all information provided will be destroyed and not used in any form in this research.

5. **Access to Results**
   Data gathered in this research will be held in strictest confidence and not shared with any other party. The results of this research will form the basis of a thesis, but individual participants will not be identifiable.

6. **Disclosure**
   After having read this document please feel free to contact Mr. Chris Lawrance, a Master of Education (Research) candidate at the University of Sydney, with any questions or concerns you may have. Contact details on page 1 of this document.
Appendix C: Interview Consent

Interview Consent Form

Faculty of Education and Social Work

Supervisor:  
Professor Anthony Welch  
University of Sydney  
☎ +61 2 9351 3175  
Email: anthony.welch@sydney.edu.au

Researcher:  
Mr. Chris Lawrance  
University of Sydney  
☎ +61 2 86278310  
Email: Chris.lawrance@sydney.edu.au

1. I agree to be interviewed for the purposes of research into graduate outcomes.

2. I agree that the interview may be electronically recorded.

3. Any questions that I asked about the purpose and nature of the interview and research have been answered to my satisfaction.

4. I understand that I will not be identified either directly or indirectly in the course of, or in the findings of this research.

Name of interviewee_______________________________________
Signature of interviewee__________________
Date_____________________

5. I have explained the basis of this research and the implications of being interviewed to the interviewee and I believe that the consent is informed and that he/she understands the implications of participation.

Name of interviewer________________________________________
Signature of interviewer_____________________________________
Date_____________________

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Appendix D: Interview Protocol

Interview protocols, Engineering Graduates

Interviewees:
Selected Engineering Graduates from the University of Sydney University, Yonsei University and Northwestern University

Project Title: Effect of choice of education destination on graduate outcomes

<table>
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Introduction

Establish rapport:

My name is Chris Lawrance, a Masters of Education (Research) candidate at the Faculty of Education and Social Work at the University of Sydney. Thank you for accepting to be interviewed as part of this research project.

If you wish to know about the results of this research you can contact the researcher for a copy of the findings once they have been produced.

The findings of this research will be used in the thesis of a Masters of Education (Research) at the University of Sydney.

Your personal information will be kept confidential, and will not be identified in the research result. The interview is likely to take 30 – 40 minutes, please let me know if you need to reschedule the interview or withdraw, at any time, during the process.

Outline purpose:

This research aims to test what effect, if any, the choice of education destination has on graduate outcomes of domestic and international students.
Questions

1. What is your current employment situation and position?

2. How long did it take to find employment after you graduated with your bachelor degree in engineering?

3. Do you think this outcome would have been different if you had chosen to study in a different country?

Closing

Thank you for agreeing to this interview. Your contribution will assist this study greatly; please feel free to contact me if you require any further information.
Appendix E: Ethics Approval

Research Integrity
Human Research Ethics Committee

Tuesday, 18 March 2014

Prof Anthony Welch
Education and Social Work - Research; Faculty of Education & Social Work
Email: anthony.welch@sydney.edu.au

Dear Anthony

I am pleased to inform you that the University of Sydney Human Research Ethics Committee (HREC) has approved your project entitled ‘What is the relative advantage of an Australian tertiary degree to returnee and migrant Korean students, compared to American and Korean tertiary degrees?’.

Details of the approval are as follows:

Project No.: 2014/132
Approval Date: 18 March 2014
First Annual Report Due: 18 March 2015
Authorised Personnel: Welch Anthony; Phillips Ruth; Lawrance Christopher;

Documents Approved:

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HREC approval is valid for four (4) years from the approval date stated in this letter and is granted pending the following conditions being met:

**Conditions of Approval**

- Continuing compliance with the National Statement on Ethical Conduct in Research Involving Humans.

- Provision of an annual report on this research to the Human Research Ethics Committee from the approval date and at the completion of the study. Failure to submit reports will result in withdrawal of ethics approval for the project.

- All serious and unexpected adverse events should be reported to the HREC within 72 hours.

- All unforeseen events that might affect continued ethical acceptability of the project should be reported to the HREC as soon as possible.

- Any changes to the project including changes to research personnel must be approved by the HREC before the research project can proceed.
• Note that for student research projects, a copy of this letter must be included in the candidate’s thesis.

Chief Investigator / Supervisor’s responsibilities:

1. You must retain copies of all signed Consent Forms (if applicable) and provide these to the HREC on request.

2. It is your responsibility to provide a copy of this letter to any internal/external granting agencies if requested.

Please do not hesitate to contact Research Integrity (Human Ethics) should you require further information or clarification.

Yours sincerely

[Signature]

Professor Glen Davis
Chair
Human Research Ethics Committee

This HREC is constituted and operates in accordance with the National Health and Medical Research Council’s (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.