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BUILDING A HOMEGROWN UNIVERSITY WITH GLOBAL ASPIRATIONS IN QATAR: LESSONS FROM ASIAN UNIVERSITIES

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ABSTRACT

Developing a sustainable knowledge-based economy has emerged as a priority to many economies. Education and innovation are seen as the building blocks for creating this knowledge based economy. As Non-western Universities rapidly make their way to the top of international rankings, there is an underlying interest in studying their success factors. This paper studies the experiences of three world-class Asian universities: the Korean Advanced Institute for Science and Technology (KAIST), the Hong Kong University of Science and Technology (HKUST), and the National University of Singapore (NUS). The paper infers that, although there are commonalities between the three Asian universities, their unique strengths and historical context have significantly contributed to their success. For a university to be successful, it should have a clearly defined sense of purpose, include key stakeholders in its decision-making processes and allow for financial independence by relying on the endowment and fundraising model.

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INTRODUCTION

Globalization of Education: the Asian Context

The globalization of our economies has been one of the driving factors in shifting economic advantage from a factory-based model to a knowledge-based model. Such a shift has privileged those that can produce the most patents and innovative products in the global context, over those that can produce the greatest number of goods for trade (Brown, Lauder, Ashton, 2010). Therefore, the caliber of higher education has emerged as paramount in producing such innovative and efficient economies (Marginson, 2006). Such institutions that were once meant to cultivate culturally appropriate members of a given society, have now transformed into drivers of the knowledge economy. Inevitably, governments have, in response, shifted their focus to investments in research and the envelopment of citizens capable of innovation rather than factory work (Brown *et al.*, 2010).

This has highlighted the importance as well as the rapidly evolving role of higher education institutions, to create and nurture the development of research institutes that foster such innovative growth. The growing prosperity of knowledge-based economies found in Europe and the West has set an example for other countries (Brown *et al.*, 2010). This has triggered a surge of investments in higher education all over Asia. The growth of investment in the higher education sector brought about rapid returns for Asian cities and countries such as Hong Kong, China and South Korea. For example, South Korea in 1991 had less than 30% of its population attaining a tertiary education. However, in 2007, over 50% of the population had earned that same qualification (OECD, 2008). Certain Asian countries additionally shifted their investments from military-oriented research towards civilian and innovation-oriented research, and did so by outlining and reflecting this priority in their nations' long term plans (Suttemeir, Cao, Simon, 2006). This push for excellence is noted in the 2017 Times Higher Education (THE) World Rankings¹, which featured 6 of the top 50 universities from

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¹ Times Higher Education (THE) is one of the leading providers of higher education data. As of 2016, THE World University Rankings claims to have

China, Hong Kong, and Singapore (Times Higher Education, 2016). These institutions include the National University of Singapore (NUS), Hong Kong University of Science and Technology (HKUST) and Korea Advanced Institute of Science and Technology (KAIST), which have placed themselves among the elite world-class research universities. The paper will focus on these institutions and their respective success factors. The first of these success stories is the National University of Singapore, founded in 1905, by a group of businessmen to serve the local community (NUS, n.d.). Although it is currently ranked number 24 by THE, this university has seen many shifts throughout the course of its history. One such critical shift was in 1977, with the merging of NUS and its non-English counterpart, Nanyang University. This allowed the two universities to support one another and pool their resources, in addition to supporting English as Singapore's main language of education (Gopinathan, 1989). The Korea Advanced Institute of Science and Technology National University (KAIST) was founded in 1971 in South Korea and currently ranks as number 89 by THE. Its creation was commenced through a loan from the United States (US), in order to focus on science and technology research in South Korea. Since its establishment, the university has also expanded to create programs in business, social sciences and humanities. The Hong Kong University of Science and Technology (HKUST) was founded in 1991. This recent university has rapidly risen to the top 50 world rankings within the past 20 years (Times Higher Education, 2011). HKUST's mission focuses in the areas of science, technology, engineering, management and business studies, with an overall focus on the economic and social development of Hong Kong (HKUST, 2017).

The common success factor in the three knowledge-based economies of Singapore, South Korea and Hong Kong is the significant role that higher-education institutions have played in their development. However, the driving force to create such institutions was a context specific and historical push from the forward-thinking governments of these economies. For example, Singapore, which was originally a part of Malaysia, gained independence in 1965. The newly formed government pushed for rapid social and economic progress by working diligently to attract international investors. By creating an international investment environment, it allowed for the creation of the country's main industry through the establishment of international oil refineries. This reduced unemployment rates and increased the country's gross domestic product (GDP). In order to facilitate more job creation and a competent workforce, the government focused on English as the language of instruction in its educational centers and this further advantaged Singapore to compete on an international scale. This fast progress is reflected in the growth of Singapore's GDP per capita from \$516 in 1965, to \$52,888 in 2015 (World Bank, 2017). As of 2015, its GDP is \$292 billion, making it the third richest country in the world (World Bank, 2017). The second historical context is that of South Korea, which gained independence from Japan in 1948 (Federal Research Division Library of Congress, 1992). After independence, it went through alternating periods of autocratic and democratic rule. However, during the 1960s, the country expanded economically and socially with a rapid development of education at the tertiary level. This has allowed the country

to quickly develop from one of the poorest to one of the richest nations, with currently the 15th highest GDP in the world (World Bank, n.d.) The third case looks at Hong Kong which, although a part of the People's Republic of China (PRC), has had a different historical progress as compared to the other Chinese regions. From 1898 to 1997, Hong Kong was under British rule, under the Second Convention of Peking (Tsang, 2007). This British influence accounted for many differences between the regions. For example, Hong Kong benefited from more autonomy in terms of economics, trade and free press (Tsang, 2007). Additionally, English was taught and continues to be taught in schools, in addition to Cantonese. On the other hand, Inland China has been a socialist nation with more government oversight and continues to be so. In 1997, Hong Kong was given back to China to be ruled under a "one country, two systems" policy for 50 years (Carole, 2007). Given that these three historical contexts have been instrumental in ensuring the progress and direction of their higher education centers, historical context and government support in countries that are interested in improving their economies must be aligned. The paper will look at the role of widely accepted success indicators – such as university governance, structures and policies – as a way to measure overall success of any university that aspires to be world-class.

University Success

In the literature, the definition of what a successful university means has been widely debated in recent years. The most obvious answer is that it means achieving the top position in world-class university rankings or a high rating in national research assessments, such as the Research Excellence Framework (REF) in the UK or the Performance Based Research Fund (PBRF) Quality Evaluation in New Zealand (Parmenter, Orunkhanov and Kurakbayev, 2014). At the global level, there is already a significant body of literature on world-class universities (Salmi 2009, Hazelkorn 2011), however, most world university ranking methodologies are heavily dominated by research indicators that can establish a global brand for that university. This aspiration to become a recognized world-class university is now a defining trait for the "successful research university". This ambitious mindset is prominent and shaped by a university's mission and vision statements (or, less frequently, national policies and targets) in the majority of countries in the world. In order to understand the success experienced by the paper's three case studies, the analytical focus will be on the vision and mission statements of the chosen Asian universities, so as to gauge the contribution of these factors to overall university success. However, overall success does not occur due to a single critical decision by the institution, but rather through improvement in various aspects of the university ecosystem and institutional culture (Shattock, 2010). These success aspects or indicators include research and innovation, reputable teaching and faculty, offering diverse student experiences and the level of social responsibility exhibited by the university to its local and national community. For many universities, the goal for becoming successful can entail being a "world class university". However, the variations in the definition of what constitutes a "world class university" can be the first hurdle for a new and upcoming university. The first obvious challenge is in the naming of the goal, with some referring to them as "flagship universities" (Bunting, Cloote and Schalkwyk, 2014; Douglas, 2014, and Yonezawa, 2007), while others use the term "internationally recognized" research universities

(Mohrman, Ma and Baker, 2008; Levin, 2010; Saaid, 2014, and Rosovsky, 2014), and some even call the top six THE ranking universities “super brands” (Marginson, 2012). However, a majority of ranking methodologies use the term “world class university” and this is helpful in giving clarity to the goal of what success in the university setting could mean (Altbach 2005; Altbach and Balan 2007; Shattock 2003 and 2010; Krishnan 2005; Deem, Mook and Lucas 2008; Ngok and Guo 2008; Salmi 2009; Shin 2009; Rhee 2011; Yang and Welch 2012). While there are significant differences and nuances in the choice of terms, the shared belief and core understanding of all these variants is “a university that is commonly held to be one of the best in the world” (Albach *et al.*, 2007). In doing so they cede legitimacy to methodologies used by Times Higher Education, US News and World Report’s rankings, that see reputation as a major element in the chosen term.

Measuring University Success Through Research

Becoming a successful research university, as measured by global rankings such as THE or QS, usually entails close attention to the criteria for such rankings, which is based mainly on research achievements and outputs. For example, the University of Iceland’s policy urges an increase of publications in high-impact journals and ties promotions to publication in such journals (University of Iceland, 2011). At the same time, being a successful research university means more than just a rank in the Times Higher or QS rankings list. It also means active involvement in global research networks and partnerships. Recently, more and more research universities are participating in such global networks, which include the Coimbra Group, the International Alliance of Research Universities, Universities 21, the League of European Research Universities, and the Worldwide University Network. According to Thomson Reuters’ database, nearly half of all influential research publications are published by international teams (Thomson Reuters, 2017). This shows that international collaboration has increasingly become a premise of success in research and innovation. The purpose of such networks and teams is not only to provide opportunities for research collaboration and interaction, but also to influence policy. The function and power of these networks has not yet been thoroughly studied, but it is likely that they will become increasingly important in the same way as other aspects of globalization networks (Castells 2000; Ball 2012). Being a successful research university requires the appointment and retention of highly productive researchers, as well as researchers’ development through postgraduate research degrees (Interview, 2017). This not only creates a competitive market for researchers, but also facilitates the easy movement of researchers across the world. As explicitly stated in the 2013-2014 Times Higher Education World University Rankings methodology, “the top universities compete for the best faculty from around the globe”, and of which 2.5% of the total score was given by the ratio of international to national staff (Times Higher Education, N.D.). In addition, any well-known ranking system also considers research capacity as a fundamental indicator of a university’s success. Such research capacity may be characterized by various criteria, including Nobel Prize winners or the number of publications in reputed journals. The association of university success with a certain number of Nobel prizes or other respected awards is arguable, but such indicators do indicate the presence of well-established research traditions that have created the conditions for

qualitative growth in research capacity and research output. This might also indicate that university research resources are a *sine qua non* of knowledge generation and innovation in technology. In order to secure funding for extensive research needs, efficient systems and professional staff with the expertise to support research grant identification and applications are required. In addition, once the university secures these grants, the next step is the administration of grants, management of research support, collaboration and reporting procedures. Therefore, a successful university would be one that is supported in various forms, from having strong foundations through its administrative staff to creating new innovative research and knowledge.

The Role of Teaching and Faculty Reputation

While teaching is often lauded as an element of a great university it is seldom, if ever, cited as the primary goal of a world-class university. Despite the relatively narrow focus of what characteristics are pursued (as outlined above), most definitions of what constitutes a “great” university tend to be broad. Some like Salmi (2009), offer a small number of generalities, including “high concentration of talent”, “abundant resources”, an operating environment that encourages “innovation” and managerial independence. Others highlight “generic but informative traits” (Douglas, 2014: 4) offering little guidance to institutional leaders other than hire wisely and raise money. However, those who study the management and operation of higher education institutions tend to be more granular in their approach. The literature on management and operation specifies principles and processes that distinguish outstanding organizations. These can be lengthy checklists of fifteen to twenty items ranging from financial diversity (Alden and Linn, 2004) to institutional research capacity (Douglas, 2014, p.19). Alternatively, they can be sets of principles or axioms embedded in national models like Japan’s Imperial Universities (Yonezawa, 2007) or the research-focused universities in the US. For example, Rosovsky (2014), the Harvard Dean Emeritus and scholar, sets out six elements for a top US research university: “Shared governance with a collegial administrative style, academic freedom, merit selection of students and faculty, significant human contact – “real as opposed to virtual encounters between student and teachers”, preservation and transmission of culture as one of its missions; and a non-profit status.” In addition to this, Weiler, Guri-Rosenblit and Sawyerr (2008: 16) list the ingredients of research capacity as “capable researchers, time, infrastructure, research climates, funding, structural conditions, research ethics and critical perspectives.” Inter-disciplinary networks, high-quality researchers, early-career researcher development, capacity to obtain funding for and implement research are all mentioned as contributing factors to success in global rankings. It is evident that all these characteristics are part of what it means to be a successful research university, although, this is by no means a complete list. Given the nearly universal emphasis on these above characteristics for a research university to succeed, the task of defining indicators for success is largely agreed upon. While almost all universities aspire to excellence in teaching, defining a successful teaching university is slightly more challenging. Although attempts have been made to standardize measures in this area, successful teaching is dependent on assumptions about the role of the teacher, the education process, and the aim of learning (Moutsios, 2013). In Europe

and beyond, the Bologna Process² and concomitant prevalence of learning outcomes-based university education have done much to either standardize some of these assumptions or impose a certain view of successful teaching and learning on universities with diverse expectations and practices in this area (Moutsios 2013: 39). The growing influence of publishers producing textbooks based on the European idea of successful teaching and international education providers, at the same time explicitly or implicitly promoting a specific view of it, also adds to the process of standardization. However, without global indicators similar to those that exist for research in the form of global university rankings, there is substantial cultural variance in assumptions about what constitutes successful teaching. At a transnational level, initiatives associated with the implementation of the Bologna Process provide an example of an attempt to define characteristics of (one view of) successful teaching, although such initiatives may be mediated through national lenses, thereby diluting the results in comparison to the original intentions. Some countries have made substantial national effort in developing methods of empirically evaluating successful university teaching. For example, the Key Information Set (KIS) data in the UK provides open access information on student satisfaction with courses, methods of teaching, methods of assessment, percentage of the course taught in Welsh (where applicable), and so on (Unistats, n.d.). The stated aim of providing KIS data is to help students identify what and where they would like to study. However, the data influence perceptions of what counts as successful teaching, by creating a hierarchy of universities and courses according to whether they comply effectively with this model of teaching and assessment. These systems are just one example of how various initiatives, within a higher education system, serve to define successful teaching. However, what remains debatable is the extent to which this particular view of successful teaching is culture-specific and the extent to which it would be valid and useful across diverse cultures and societies.

Creating Robust Student Experiences

This takes us to an interrelated problem, which is the question of what does it mean to be a successful university in terms of student experience. The same caveats about cultural diversity in assumptions and interpretations of what constitutes a successful university in terms of student experience apply here. The ways of capturing the success or otherwise of student experience are still underdeveloped. Although the KIS data attempts to measure this through items on personal development (e.g. asking if “student communication skills have improved.”), and through statistics on employment or further study destinations, as well as on average salaries six months after the end of the course. Such data, while useful, cannot capture the richness and depth of successful student experience, and the development of indicators is an area that requires much more study (Grebennikov and Shah 2013). However, a large number of studies have been done on student perceptions of their university experience and in particular four areas stood out. These areas addressed transition, extra-

curricular engagement, environmental factors and personal attitudes/qualities, as indicative of contributing to a successful student experience (Testa and Egan 2014: 229). The first category was transition and was one of the most non-definable for subjective reasons. It was evident that many students experienced “personal, cultural and political dislocation” (Testa and Egan 2014: 229) when they began university. For example, a working class student adapting to a middle class academic culture may have to learn to negotiate new societal and cultural norms, often having to reassess their family/community values and being able to live in two worlds (Lehmann 2014). However, students of minority ethnic groups, mature students, students with disabilities and so on may have similar yet subjective experiences of what constitutes transition for them. Another major transition issue is language: it can indeed be a major barrier to a successful experience for some students (Evans and Morrison 2011). Universities that facilitate successful student experience tend to be highly aware of transition issues and provide support in dealing with them.

The second category in successful student experience is extra-curricular engagement, which takes many forms and can have a negative or positive impact on academic progress. For example, in a UK university study done on students’ extra-curricular activities and their contribution to employability, Thompson et al (2013) found that, although most students were actively engaged in a range of extra-curricular activities, yet these were not necessarily benefiting their academic success or level of employability. Increasingly, it seems that extracurricular engagement takes place not just through organized activities, but through social media networks as well. It has been argued that course activity-related engagement on Face book and other social networking sites helps students to work through identity issues and role conflict associated with being a student (Selwyn 2009).

The third category is environmental factors and referred both to physical facilities and services. In terms of physical facilities, a study on student perceptions of academic buildings in Malaysia revealed the following themes: comfort, health and safety, access and quality of facilities, space provision and adequacy, participation and inclusiveness, and interaction. The study found that the features most emphasized by students as important were thermal conditions, internet access, and furniture, duration of access, refreshment facilities, and availability of discussion rooms (Muhammad, Sapri and Sipan 2014). Similar studies on student perceptions of services have been conducted, and improving easy access to all services is recognized as being important for the student experience (Buultjens and Robinson 2011). The fourth and final category is personal attitudes and qualities that affect the overall student experience. For example, in the study mentioned above on transition to English as a medium of instruction in Hong Kong, Evans and Morrison (2011) found that the main factors ensuring successful student transition and experience were strong motivation, hard work, effective learning strategies, and supportive peer networks. While it can be argued that universities can do little to influence factors such as motivation and willingness to work hard, some studies have found that self-efficacy, which affects motivation and learning, can be enhanced by educational programmes, contributing to both academic and personal successful student experience (van Dinther, Dochy and Segers, 2011). Creating a successful university in terms of successful student experience thus requires attention to myriad factors apart from the teaching process. These factors include quantifiable and material

² According to the European Commission, this process is the collective effort of public authorities, universities, teachers and students, together with stakeholder associations, employers, quality assurance agencies and international organizations. The main focus is to strengthen the quality and competitiveness of European education systems (European Commission, n.d). For more information: http://ec.europa.eu/education/policy/higher-education/bologna-process_en

objects (such as building design and services) and non-measurable characteristics (such as influence of extra-curricular activities as well as personal support and peer-networks of the students).

Knowledge Economy in Action

Similarly, student experience is enriched by strong links between private sector and university in versatile ways. An organic query would involve asking what it means to be a successful university in terms of engagement with industry, as well as creating the knowledge economy. As Altbach (2009) points out, there is now “universal recognition that higher education is a central element in the knowledge economy” (p.9). Successful engagement of higher education in the knowledge economy can take diverse forms. It can range from co-operation with local businesses and industries at various levels, to direct profit-making enterprises. At the curriculum level, successful engagement with the knowledge economy can manifest itself through curriculum content, general skills taught across the curriculum, or programme design. In many areas of study, there is an increased emphasis on aligning curriculum content with the requirements of employers or professional bodies. This is particularly true for subjects that prepare students for technical careers, such as nursing, teaching, engineering or accounting. Regardless of subject, most universities promote the development of skills required of the knowledge economy into the curriculum. For example, critical thinking, creativity, collaboration, cultural competence, information literacy and ICT skills are highly sought after. An effective use of internships or practicum placements to strengthen the synergy of academic knowledge and the workplace can lead to innovation and collaborative initiatives. On a wider level, a ‘successful university’ contributes to the country’s economy (Parmenter, Orunkhanov and Kurakbayev, 2014). To date, this characteristic is even more important as the economic growth of countries depends on knowledge and new technologies. Unquestionably, another fundamental feature of a successful university is its attractiveness for industry and business.

Two specific aspects in this regard are worth noting – the relevance of research innovation and recommendations for businesses, as well as the demand for highly competent and qualified graduates for industry. The contribution of business to implementation of research initiatives is a good indicator for demand in technological sciences. The highest hallmark of such demand is the industrial implementation of a particular scientific concept. While universities have a long-established role in preparing students for the knowledge economy, their direct participation in the knowledge economy as commercial partners generally rests on much shallower foundations. For universities in many countries, financial autonomy in their own internal operations is still quite a novel concept, let alone managing the switch to being part of the neoliberal market economy. As Yusuf (2008: 1168) observes, “while universities have a large hand in producing the human capital so vital for the functioning and growth of a knowledge-intensive economy, the evidence on their direct contribution to commercially viable technologies is much patchier”. Increasingly, however, universities are taking an active role in this respect, through commercial research and innovation projects, science parks and spin-out ventures, and the like (Wright et al. 2006).

Social Responsibility and Community Involvement

Another important trait that a successful university exhibits is the social responsibility in producing knowledge that is relevant to the community. The knowledge created in universities has a public nature and needs to be used for the betterment of conditions in society. Balancing the neoliberal economic imperative, the social role of universities has been emphasized in recent decades. As Herrera (2008: 295) states: “the social responsibility of universities is what links scientific, technological, humanistic and artistic knowledge produced in the context of its application to local, national and global needs. Its primary objective is to promote the social utility of knowledge, thus contributing to improved quality of life.” The contribution of higher education and its research findings to improve quality of life in national context is not new, but the role of universities in promoting global social equity and improvement of quality of life at the global scale is still an under-researched developing momentum. The social responsibility of higher education institutions is diverse and wide ranging, but three aspects will be briefly discussed here: inclusion and widening participation, social responsibility and citizenship, and the local, national and global development. Inclusion and widening participation have risen on the agenda of many universities as the social responsibility arm for the spread of higher education. Increasingly, universities are required to become accessible to a much wider audience than the traditional elite and to achieve wider dissemination of the “social utility of knowledge”. Accessibility and inclusion include physical accessibility through building design and services and through mode of delivery and timetabling, financial accessibility through scholarship and loan schemes and so on. On a social/cultural accessibility level, it means through measures that ensure the university welcomes and meets the needs of diverse students. However, inclusion is not achieved merely through widening participation and ensuring diversity, as success in inclusion as social responsibility requires deeper structural and cultural transformations in all policies and activities of the university. As Tienda (2013:470) argues, “enrollment of a diverse student body is but a pragmatic first step toward the broader social goal of inclusion”.

Another aspect of a successful socially responsible university is its role in educating students as active citizens of their communities, nation and the world. The dynamism, creativity and enthusiasm of a substantial number of people represent a significant opportunity for mobilization to really change communities and societies for the better. Increasingly, this is being applied not only at local level, but also at the global level, with universities incorporating “global citizenship” into their visions, missions and graduate attributes. This is increasing the attention in the academic literature to what this means theoretically and in practice (e.g. Stearns 2009, Thanosawan and Laws 2013). The mission statement of the National University of Lesotho is one which is mirrored by universities all over the world: to promote national advancement through innovative teaching, learning, research and professional services, producing high caliber and responsible graduates able to serve their communities in their best capacities. The idea that “accumulation of human capital through education can improve the individual incomes that can in turn leverage the economic growth of a nation” (Oh, Choi and Choi 2013: 190) is a key element of human capital theory, justifying the mission of universities to contribute to the

economic development of their countries (Parmenter, Orunkhanov and Kurakbayev, 2014). Universities contribute to national development in many more ways than simply producing well-functioning cogs for the national economic machine. For example, although it is much more difficult to measure results, successful social responsibility for national development also includes education of future leaders capable of ethical questioning and decision-making, creation of inclusive and equitable cultures that facilitate development for everyone in society, and promotion of human development based on a capabilities approach (Sen 2009, Nussbaum 2011). As Unterhalter and Carpentier (2010: 2) argue: “higher education has the potential to reduce or increase inequalities depending on the form of policies institutions, governments, intergovernmental organizations and transnational associations implement”. A university that is successful in terms of social responsibility reduces inequalities within its own institution, and actively exerts social responsibility to promote equitable development at local, national and global levels. To summarize, universities can be classified to achieve different aspects of success and therefore be put under different clusters or types of successes. Success depends on the priorities of the context in which the universities situated, as well as the achievement of all of these factors to an extent. In order to attain this ambitious goal, universities should take a number of steps, which ensure their success firstly on the institutional, regional and consequently national and global levels. This, in turn, suggests that university success is a dynamic phenomenon and its characteristics are quite relative to the specific context of each university.

University and Governance Structures

This brief review of these key characteristics suggests that success at the international and local levels may be shaped and streamlined by the direction taken by the top management and the subsequent creation of university governance structures and policies. These governance structures can allow for a top-down or trickle-down approach in the ability of a university to govern its administration and goals, as well as shape future direction. Creating such accountable and transparent governance systems is also necessary, as public funding for higher education is under pressure, and there has been increasing competition among institutions (in most national contexts) to meet societal challenges as well as fulfill trust obligations towards its stakeholders (Trakman, 2008). In order to effectively create a framework for governance, the 1997 Dearing Committee recognized three guiding principles: institutional autonomy, academic freedom, openness and accountability (Trakman, 2008). By incorporating effective governance systems, universities can become more accountable, more collaborative and more responsive to the financial constraints over time (Trakman, 2008). However, before addressing these challenges, the literature outlines five basic models of university governance: university governance by the academic staff, corporate governance, trustee governance, stakeholder governance, and an amalgam model of governance (Trakman, 2008).

Models of Governance

The first model looks at how a university is traditionally governed in the context of the academic staff, which sometimes can be identified through a collegial system of university senates, faculty representation on board of governors, or both.

This structure faces criticism, as it allows for extensive reliance on faculty and that academic staff can often lack governance skill or interest in complex financial management and systems (Trakman, 2008). However, the support for faculty representation with regards to boards of governors is strong, as it potentially contributes to and protects academic freedoms and democracy. The second model of corporate governance is more prevalent in universities today, as it encourages a business-case for university governance and fundraising (Trakman, 2008). Some of these universities include a chair and smaller board of governors, trustees, chief operating officers and chief financial officers that are in-charge of the governance direction of the university. This model is usually applied in cases where public funding is declining and there is a greater potential for financial opportunities from the private sector. However, this aspect of governance could potentially overlook the social responsibility factor previously mentioned as a major determinant of overall university success. The third model of trustee governance looks at how “governance influences ‘trust’ relationship between a trustee board that acts in trust for, and on behalf of, trust beneficiaries” (Trakman, 2008). In the case of a university, the trustee model would encourage fiduciary duty towards its stakeholders. Although this model is usually a bit vague on the specifications of how accountability and transparency works for the trustee board, it encourages greater development of university governance through the creation of trust among its management and leaders.

The fourth model is called stakeholder governance and it looks at how representative governance can be influential in the creation of a governing body. Stakeholders include students, academic staff, alumni, corporate partners, governments, and the public (Trakman, 2008). This model allows for a shared system of governance, however, critiques point out that it potentially creates vested interests among its representatives and thereby does not address the overall visions and mission of the university (Trakman, 2008). On the whole, this governance system incorporates various viewpoints and gives students and faculty a platform to raise specific issues, as well as actively work together to govern the university. Lastly, the fifth model, or amalgam model of governance, includes some combination of academic staff, corporate, trustee and stakeholder governance systems (Trakman, 2008). The benefit of this model is that it is able to incorporate the strengths of different governance systems and suit any specific needs of the university in question.

Comparison of International Rankings and Methodology

Academic Ranking of World Universities (ARWU)

While national ranking of universities in the US has been occurring since 1870, international rankings of universities only began in 2003, when the University of Shanghai published the “Academic Ranking of World Universities” (ARWU) report (Rauhvargers, 2011). These rankings were based on several weighted indicators, including criteria such as quality of faculty, quality of education, research output, and per capita performance (ARWU, n.d). Table 1 below details of these indicators, weights and criteria according to ARWU’s rankings. These rankings placed the National University of Singapore (NUS) as increasing from the top 100-150 position in 2003, to the 83rd position in its latest rankings for 2016 (ARWA, 2016). Over the years, the University of Hong Kong of Science and Technology (HKUST) also hovered around the

top 100-200 position from 2003 to 2016. The Korea Advanced Institute of Science and Technology (KAIST) went from the 300-400 rank in 2003 to be currently the 200-300 rank. These rankings are shown in Figure 1 below.

Figure 2 below broadly shows the breakdown of these areas. These rankings placed the three Asian universities of the National University of Singapore (NUS), the Hong Kong University of Science and Technology (HKUST), the Korea

Table 1. ARWU's Ranking Methodology (Shanghai University, ARWU)

Criteria	Indicator	Code	Weight
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10%
Quality of Faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20%
Research Output	Highly cited researchers in 21 broad subject categories	HiCi	20%
	Thesis published in Nature and Science*	N&S	20%
	Thesis indexed in Science Citation Index-expanded and Social Science Citation Index	PUB	20%
Per Capita Performance	Per capita academic performance of an institution	PCP	10%
Total			100%

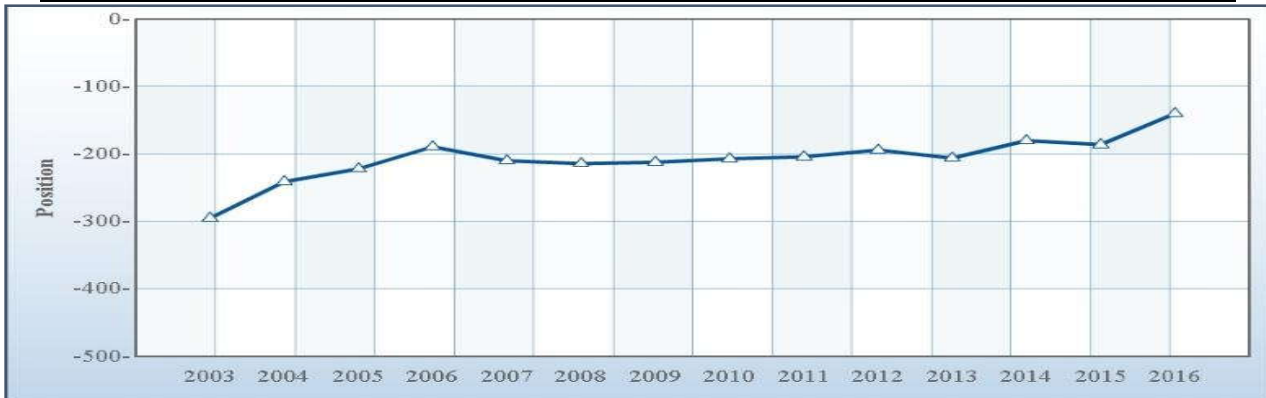


Figure 1. World Rankings of the University of Hong Kong Science and Technology (HKUST, 2016)

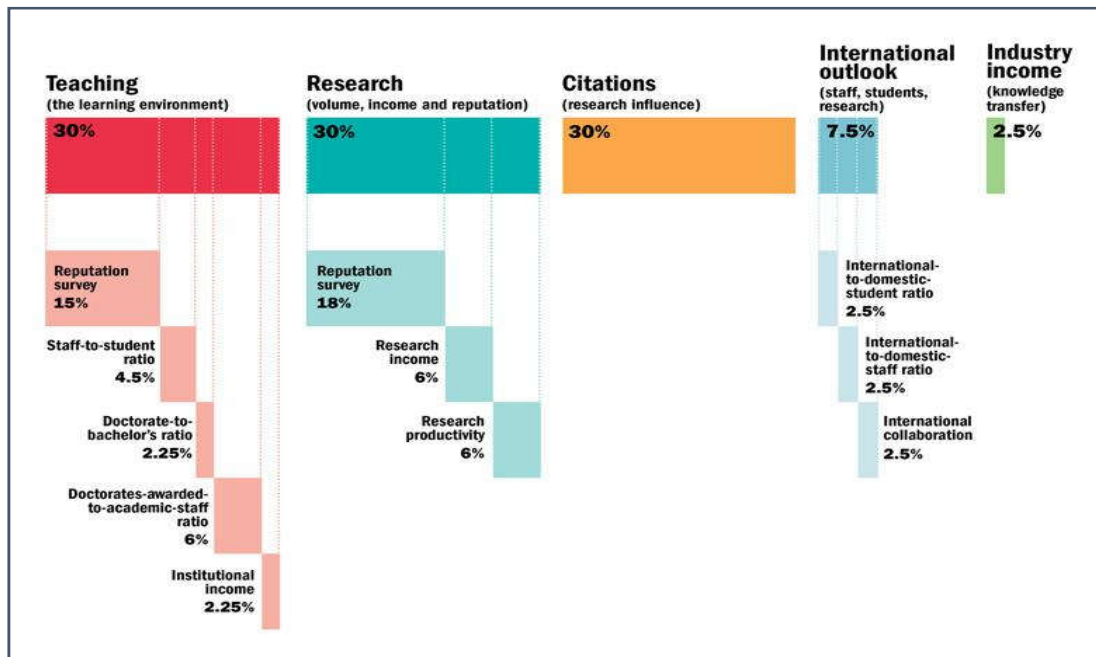


Figure 2. Breakdown of international ranking areas according to Times Higher Education (THE, 2016)

Times Higher Education (THE) Rankings

In 2004, THE and QS jointly published their world rankings of universities. However, the two separated in 2009 and THE used an alternative methodology. In comparison to ARWU, THE rankings utilized a vastly different ranking methodology. Their rankings focused on broad areas, including teaching, research, citations, international outlook, and industry income (Times Higher Education, 2016b).

Advanced Institute of Science and Technology (KAIST) as 24, 49 and 89 respectively in 2017(Times Higher Education, 2017). Table 2 below shows the scores of these three universities in all five areas.

QS World Rankings

Over the years, the QS has remained as a very popular world ranking methodology that many universities refer to as one of the top quality indicators.

Table 2. Breakdown of scores according to Times Higher Education world university rankings

University	Rank	Citation	Industry income	International outlook	Research	Teaching
National University of Singapore	24	79.7	61.3	96	86.9	76.7
University of Hong Kong Science and Technology	49	91.2	62	82.8	66.7	53.2
Korea Advanced Institute of Science and technology	89	78.5	100	34.3	53.2	55.7

Table 3. QS ranking methodology (2017)

Criteria	Rank	Details
Academic Reputation	40%	Academic reputation is measured using a global survey, in which academics are asked to identify the institutions where they believe the best work is currently taking place within their own field of expertise. For the 2016-17 edition, a total of 74,651 academics contributed. Regional weightings are applied to counter any discrepancies in response rates (QS methodology, 2017).
Employer Reputation	10%	The employer reputation indicator is also based on a global survey, this time asking employers to identify the universities they perceive to be producing the best graduates. A higher weighting is given to votes for universities that come from employers based in other countries. The 2016-17 edition draws on responses from 37,781 graduate employers (QS methodology, 2017).
Student to Faculty Ratio	20%	This is a simple measure of the number of academic staff employed relative to the number of students enrolled. In the absence of an international standard by which to measure teaching quality, this indicator aims to identify the universities that are best equipped to provide small class sizes and a good level of individual supervision (QS methodology, 2017).
Citations per Faculty	20%	This indicator aims to assess universities' research impact. A 'citation' means a piece of research being cited (referred to) within another piece of research. Generally, the more often a piece of research is cited, the more influential it is. QS collects this information using Scopus, the world's largest database of research abstracts and citations. The latest five complete years of data are used, and the total citation count is assessed in relation to the number of academic faculty members at the university, so that larger institutions do not have an unfair advantage. For the 2016-17 rankings, QS analyzed 10.3 million research thesiss and 66.3 million citations (QS methodology, 2017).
International Faculty Ratio	5%	The last two indicators aim to assess how successful a university has been in attracting students and academics from other nations. This is based on the proportion of international students and faculty members at the institution(QS methodology, 2017).
International Student Ratio	5%	

Their ranking is based on the criteria of academic reputation, employer reputation, student to faculty ratio, citations per faculty, international faculty ratio, and international student ratio. The weights and details of these criteria are detailed in Table 3 above. The QS world ranking 2017 placed NUS at 12, HKUST at 36, and KAIST at 46, confirming the success of the three selected universities. The table below shows the details of these rankings. There are a few common criteria in the above chosen methodologies for the world rankings of universities. First of all, research and publications are a top priority for all three of the international ranking methods discussed. Thus, universities may start tying promotions with publications. Additionally, the ARWU methodology focuses more on Nobel prizes and field medals of faculty and alumni, whereas the THE and QS methodologies seem to have more in common. Both the THE and QS include teaching environment and international outlook as part of their ranking structure. Both place a stress on student to faculty ratios as indicators of quality teaching. While this is arguable, it can have implications for university policy-making and admissions criteria. In addition, both the QS and THE methodologies stress the importance of reputation through a survey. There is also an emphasis on the ratio of international students to staff, which in turn places an additional need to appease the international community and stakeholders in order to facilitate recruitment.

The Three Asian Education Systems

The Historical Context

- The case of Singapore – In Singapore, colonialism had produced a lop-sided economy that was strongly dependent on being the port center for trade in the region

(Boon, 2006). However, over the years the government of Singapore realized that science and technology were vital ingredients for a transition towards a knowledge-based economy that dictated a country's level of competitiveness. Therefore, in 1965 the government priority was to develop an industrialized economy that would be a viable economic entity on the international trade platform (Boon, 2006). This strategy was welcomed as it allowed for the integration of economic and political survival; thereby creating a "national interest" that would allow Singapore to catch-up in fields such as education and human capital development. Its survival driven approach allowed for English to be seen as a primary tool in its efforts to make it globally competitive (Boon, 2006). Initially, education in Singapore was financed almost entirely from State revenue however, by the end of the 1970 s, the model had changed to that of efficiency-driven education that brought in the New Education System (NES)³ (Boon, 2006). Since 1997s and until the present, the focus on creating a knowledge-driven economy has allowed for Singapore to shift away from being a port city that facilitated trade to being an economy that supplies technological and efficiency-driven solutions and products. With an entrepreneurial approach and innovation-driven mindset that was inculcated into Singapore's youth and students, the case of NUS evolving to a world-renowned rank was expected.

³The NES provided three streams in both primary and secondary school, to allow pupils to progress at a pace more suited to their abilities. This system also stressed a national curriculum that focused on bilingualism, training and employment that allowed each student to go as far as possible in school (Boon, 2006).

Table 4. QS world rankings of the NUS, HKUST, and KAIST (2017)

University	Academic Reputation	Employer Reputation	Student to Faculty Ratio	Citations per Faculty	International Faculty Ratio	International Student Ratio
National University of Singapore	91.5	100	88.1	70.9	100	90.8
Hong Kong University of Science and Technology	91.1	86	45.7	87.5	100	98.7
Korea Advanced Institute of Science and Technology	85.5	83	69.2	99.9	23.5	NA

Table 5. A The institutional governance structures in all three Asian universities

Governance criteria (Institutional level)	HKUST	NUS	KAIST
Independent and autonomy	Yes (by having Court, consular, and board of trustees).	Yes – it is an autonomous university.	Responds to the Board of Trustees.
Clear Strategy	Yes.	Yes.	To an extent – it relies on a founding philosophy.
Academic freedom	Yes.	Yes.	Yes.
Research freedom	Yes.	Yes.	Yes.
Financial Stability (Endowment)	Yes, amounted to \$300 million.	Yes, approximately \$3.12 billion SGD.	Not known.
Performance management & Reporting	Yes, issued annually.	Yes, there is an annual report as well as an independent financial audit.	It has an Auditor's Office, which is responsible for doing so.

Table 5. B The state governance structures in all three Asian universities

Governance criteria (State-level)	HKUST	NUS	KAIST
Governmental funding and support	Yes, it highlights how it leverages funding opportunities in the world. ¹	In 2005, the government accepted the recommendations of the University Autonomy, Governance and Funding (UAGF) Steering Committee to devolve greater autonomy to its publiclyfunded universities.	Creation of the Korean Institute of Science and Technology (KIST) was through a loan from the United States (US) Agency for International Development in 1970.
Regulatory	It only has its one education committee, responsible for the regulation and rules.	Transitioned from statutory board to a not for profit company limited by guarantee. Its old University Council was replaced by a board of trustees as of April 1, 2016. ¹	Not known.
Eco-system	It is mentioned in its Strategic Plan that HKUST is looking to strengthen its diversity through an ecosystem that attracts top talent. It is encouraging flexible curriculum. ¹	Encourages an entrepreneurial and innovation-based ecosystem.	Focus on diversifying academic opportunities by allowing student exchanges with Denmark, US and Germany.
Governance criteria (State-level) Private sector involvement	HKUST Yes, there are partnership, customized programs, and funded research.	NUS It is collaborative with private sector initiatives such as Microsoft's Institute of Data Science and Semcorp Industries in the Semcorp-NUS Corporate Laboratory.	KAIST Daedeok Science Town (1973) established by President Park with the opening of KAIST (World Bank & Korean Expert Consulting Group, 2016 ¹).
Community engagement	Yes, it encourages the start-up of social enterprises and promotes community service programs.	Yes, there is an active focus on contributing to the community.	Yes, there is a focus on contributing to the Korean economy.
Commercialization of knowledge	Yes, it partners with industry actors through its Industry, Education and Research Base in Shenzhen. ¹	There have been advances in the field of biomedical sciences, finance and risk management, integrative sustainability solutions, maritime and materials science clusters. ¹	KAIST has produced alumni that have contributed towards the ICT, science, and entertainment.

• The case of Hong Kong – Prior to the 1990s, university enrolment was confined to 2-3% of the current cohort of the student population. Such low numbers were mainly due to students needing to overcome the hurdle of two public examinations (Lui, 2014). After the competitive selection, the chosen few were rewarded by the colonial government with the opportunity to receive a highly subsidized university education, which ultimately ended up promoting the local elite. However, changes to this elitist system began in 1980s, as a response to the problem of 'brain drain' triggered by talks between Britain and China over Hong Kong's political future after

1997. The colonial government began pushing for major infrastructure initiatives to (e.g. building new international airport), and as a result it pushed university participation rate around 18% (Lui, 2014). Additionally, emerging financial problems such as the Asian Financial Crisis in 1997, pushed for the government to declare a target of at least 60% of youth population to be undergoing some form of post-secondary education by the end of 2010 (Lui, 2014). This move towards a knowledge economy was supported by the encouragement of self-financing higher education sector, as well as building a long-term vision of Hong Kong as

an economic hub for the region. Despite this goal, Hong Kong's higher education is still heavily dependent on public funding and is unable to make its education system truly globally competitive, as this would be contentious to local students, as well as trigger political opposition (Lui, 2014). However, as we will see in the next section, HKUST has been working towards creating a globally competitive brand name that not only attracts foreign students, but also relies less on public funding.

- The case of South Korea – The basis of the Korean economy rapidly transformed from labor-intensive industries to heavy or chemical industries and then to technology-based industries within a short time period of two decades. This transition was mainly due to the national focus on education and research in tune with its economic development plan that was first put into place in 1961 (Shin, 2014). Initially the funding came from public sources and was oriented towards teaching as well as labor-intensive industry or heavy and chemical industry. In the 1980s-1999, universities transformed their focus towards teaching as well as small-scale research that focused on mid-technology-based industries (Shin, 2014). Furthermore, in 1999 and until the present, universities incorporated a balance of public and private sources of funding and additionally transitioned to research and development (R&D) into high-scale technology (Shin, 2014), and thereby building towards the goal of a knowledge economy. In this historical context, it is worth noting that researchers at Korea Institute of Science and Technology (KIST) were instrumental in guiding the research development and overall creation of globally-inclined institutions such as KAIST.

Governance and Structures

The term “governance” in the context of universities has been referred to as the “processes of decision-making within an institution [which] enables an institution to set its policies and objectives, to achieve them, and to monitor its progress towards their achievement” (Oxford, 2006). However, such a definition of governance allows for a vast interpretation of governance structures. In doing so, it can be inferred that one of the foremost factors in influencing the decision-making process, lies in an organization's vision and mission statements. Thus, when discussing the governing structures and bodies of the universities as well as their governing policies, the visions and missions will be analyzed first. From there, the governing structures will be identified, compared, and contrasted.

This will be followed by an analysis of how and if the state is involved in university affairs and to what extent the institutions enjoy independence. NUS has a board of trustees that is comprised of key stakeholders from both the government sector and the private sector. The management of the university comes together with additional members to create a senate and senate delegacy, who are responsible for major decision-making in the university. Such decisions include the creation or dissolution of faculties or research centers and the resetting of purposes of gifts. This shows the university has autonomy in major decision-making unlike some other Asian national universities, which may need ministry or government approval before making any major decision (Trow, 1983).

Universities with higher government oversight are less likely to be allowed to independently make important decisions, such as faculty hiring, building international networks and so on (Trow, 1983), and this in turn could influence their ability to succeed in terms of the indicators used by THE or QS. HKUST is governed by three entities – the Court, the Council and the Senate (HKUST, 2017). The Court has members including various stakeholders who are in charge of fundraising and promotion efforts. The Council also includes lay members and works as a governing body of financial and human resources. While the senate comprised of academic staff and student representatives, deals with academic affairs. These roles are clearly defined and include vast stakeholder participation from the state level to the student level. KAIST, although funded almost entirely by the government, is governed by a Board of Trustees whose appointments are approved by the Minister of Science and Technology (Choi, KAIST Herald, 2013).

The Board of Trustees is comprised of about 15 members from academia, the industry and the government. Some notable members include the university presidents, vice-minister of education and vice-minister of science and technology that are appointed to the board. These board members make key decisions such as approving faculty and making major changes or recommendations to the rules and regulations surrounding the university structure. With this governing structure, the three Asian universities ensure full stakeholder buy-in. These stakeholders always include government and industry officials that could help facilitate communication across sectors. Having such stakeholder oriented governance structures can be looked at as the potential contributor to the universities' success and its subsequent high scores on international rankings, in terms of reputational surveys and research incomes. Table 5 below summarizes governance structures (both institutional 5-A, and state 5-B levels) in all three Asian universities being considered in this thesis.

Vision and Mission

There are similarities between the visions and aspirations of the three Asian universities, summarized in table 6. The first obvious similarity is that all three universities clearly state their aspirations and aims. They all share a clear sense of purpose. The Hong Kong University has clearly written out its aspirations and purpose in the form of a vision and mission statement, available on the university website, indicating that the university facilitates communication with its stakeholders.

The National University of Singapore similarly has a clear and easily accessible vision and mission on the website. For KAIST, the aspirations are written in the form of a research vision, founding philosophy, background and purpose. However, KAIST also has a short mission and vision, which can be found in the strategic plan, but it can be assumed that the founding philosophy is what provides the institution its sense of purpose and direction. They have clearly defined their purpose at the global, as well as at the local scale. For example, the Hong Kong University aims to be a “leading university of significant international impact”. This reflects a clear aim for globally renowned excellence. At the same time HKUST has a clear global, national and local component integrated into its vision. NUS also show this conscious building of a local and global existence. Its vision statement clearly states: “a leading global university centered in Asia,

influencing the future” (NUS, n.d.). This statement explicitly mentions the term “global” and insinuates the local component by mentioning “centered in Asia”. KAIST’s founding philosophy also shows this same theme. It has written its philosophy with three components: “KAIST within Korea”, “KAIST within the World”, and “the world within KAIST”. Thus, one important facet of a world-renowned university is having a clearly defined sense of purpose and high aiming aspirations that are reflective of its global ambitions and local impacts.

Financial Regulations and Government Role

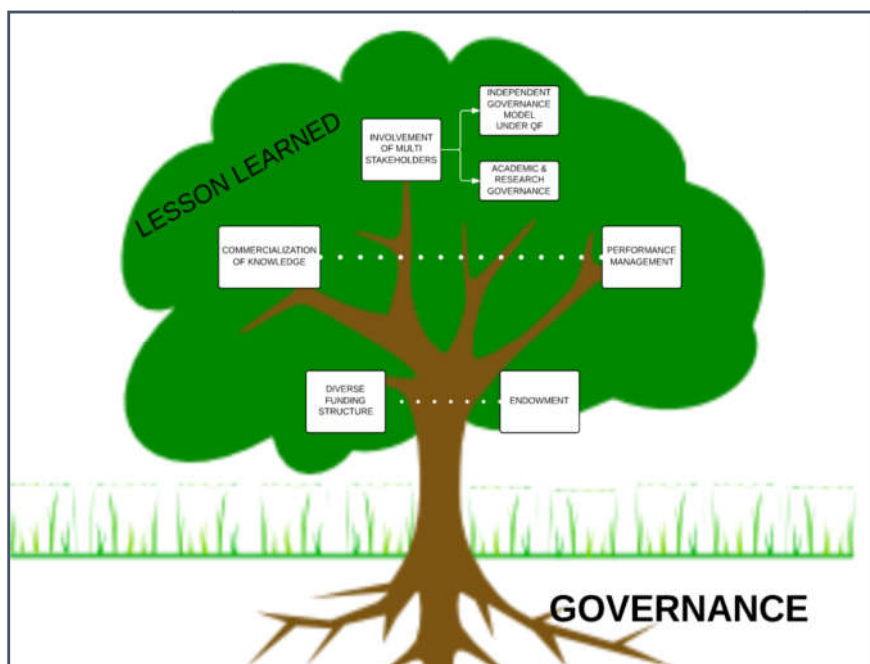
All three universities are financially supported by the government to various degrees. At the same time, they seek funding from the private sector, in terms of endowment funds, as well as through research grants. The methodology for regulating financial affairs and managing the role of the government varies in different contexts. The National University of Singapore is arguably the most transparent in its policies as they can almost all be found on its website. This university, although considered as a national university, has ample financial autonomy.

According to its Statute 7, “the university president is authorized to set priorities for fund-raising and to review and set administrative policies and procedures concerning Gifts to the University” (NUS Statute 7, 2011). The university, under the recommendation of the board of trustees and the president, has the right to invest those funds and define the purpose of the gifts. In addition, the university also releases a financial report every year that has been made by an independent auditor (NUS Financial Report, 2016).

The Hong Kong University of Science and Technology shares a similar degree of independence with regards to its financial management. A university ordinance outlines the authorities and powers of the university. This document states the university is independent in its ability to solicit funds and grants, invest them, and set fees. Fundraising is also considered a high profile task set as a main objective of the Court. The government would provide the funds to the University Grants Committee and from there the operations of the university were no longer tied to the government. The planning of KAIST began around 1970, and what is known as the KAIST Term an report (1970) outlines the general authorities and autonomies of the university.

Table 6. Summary of the Vision and Mission Statements of the three Asian universities (2017)

	National University of Singapore (NUS)	Hong Kong University of Science and Technology (HKUST)	KAIST (Founding Philosophy)
Vision	A leading global university centered in Asia, influencing the future (NUS, n.d.).	To be a leading University with significant international impact and strong local commitment (HKUST, n.d.). Global – To be a world-class university at the cutting edge internationally. National – To contribute to the economic and social development of the nation as a leading university. Local – To play a key role, in partnership with government, business, and industry, in the development of Hong Kong as a knowledge-based society.	<ul style="list-style-type: none"> KAIST within Korea KAIST was established in 1971 to model a research focused university and to foster elite human resources in science and technology needed by the nation. KAIST within the World KAIST has successfully become a well-respected member of the worldwide science community. The World within KAIST KAIST must become a university in which the world lays its eye upon, by discovering the best leaders, offering the best education, and becoming the envy of the academic world, all over the world.
Mission	To transform the way people think and do things through education, research and service (NUS, n.d.)	<ul style="list-style-type: none"> To advance learning and knowledge through teaching and research, particularly: <ul style="list-style-type: none"> - in science, technology, engineering, management and business studies; To assist in the economic and social development of Hong Kong. 	



This report reflects a purposeful establishment of an independent institution that is only supported by the government through endowment funds and appropriations. Although, a majority of the financial support is through government funding, the university is still free to seek additional funds or grants either from international bodies or through the industry. This report states that KAIST holds the authority and responsibility of hiring and supporting faculty and investing funds.

Strategic Plans

Each of these universities has clear and communicated strategic plans. This has long been considered as an international best practice for both for-profit and not-for-profit institutes (Bryson, 2011). The Hong Kong University of Science and Technology has a 5-year strategic plan with 5 strategic objectives. These objectives are “a university of choice for talents, a leader in education and talents, a powerhouse in innovation and entrepreneurship, an exemplar of best-in-class standards, practices, and operations as an agile and effective organization, and a champion in diversity to build an inclusive and collaborative community” (HKUST, n.d.). These objectives are then followed with clear strategies to achieve them. It is important to notice several aspects regarding these objectives and strategies. First, like the vision and mission, these are embedded in a local and global context. For example, the objective regarding education and research states the institute aims to “play a positive and impactful intellectual leadership role locally, regionally and globally.” These objectives also show world scale ambitions, for example, the strategic plan aims at “world-class talents and global intellectual leadership” (HKUST, n.d.). Additionally, the 5 key objectives and strategies reflect many components of the world rankings. For example, when using the QS rankings, 5 of the 6 aspects are indirectly reflected in the strategic plan Table 6 above outlines these comparisons.

KAIST also has a transparent mid to long-term plan, based on three broad strategies: “fostering convergence-oriented talent by combining academic excellence and creativity, becoming a global research university by leading a knowledge-based and creative economy, establishment of a global campus based on cooperation and exchange” (KAIST, n.d.). As is the case of HKUST, the strategies are quite similar to those quality indicators on international rankings. Components of the mid to long-term plan reflect the indicators used by QS. Similarly to HKUST, KAIST has a strategy reflecting global aspirations: to be a “global science and technology leader”. NUS does not have its strategic plan published on its website. Yet, components of the strategy have been referred to in other areas. One such area is written by the President of NUS on the Times Higher Education website. This article was titled, *The Pillars of the National University of Singapore's Success* (Chuan, 2016). The following factors led to NUS's success: agility and drive, the recruitment and nurture of top-class talent, the ability to innovate and differentiate, and building global partnerships (Chuan, 2016, p.1). The article also mentions how the president believes that the university should be a global leader in research and innovation, which are reflective of its global aspirations.

Conclusion

The conclusion is best illustrated in Tree Metaphor, since education impact has a long run, where strong roots can crop

reliable branches, hence fruits “results” can be benefited from. (Figure 5: Tree Metaphor of Governance)

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