Uruguay Global

Case Studies, Externalities, and Impact Evaluation

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**Executive Summary**

We embarked on this project with the ultimate goal to provide external information that would both inform the decision to launch Uruguay Global as well as advise how best to launch to achieve success. In the previous project, direct consumer contact was made to truly understand customer motives, interests, and behaviors. As the next study, we have connected with other institutions who have embarked on similar regional or global transformative initiatives to see what we could extract as learnings. It must be noted up front that while the case studies all have something similar with Uruguay Global, there is no exact match to what the IDB and Uruguay Government is trying to achieve. Therefore, this project is both an art and a science – learning as much as we can and understanding what bits are applicable.

In addition, this study investigated spillover effects that governments and institutions have tracked over the years as well as impact evaluation studies.

**Methodology**

Our main sources of data were from secondary research, education journals, institutional websites and marketing information. For each case study we also conducted interviews with those responsible for the launching of the initiative or the partnership. In a number of the case studies we were able to connect with the partner as well.

**Case Studies**

All in all five case studies were completed including: Cornell Tech in New York, Carnegie Mellon University in Qatar, Carnegie Mellon University in Rwanda, Northeastern University in Silicon Valley, and Yale-NUS College in Singapore. While each of them is intricate and provides many insights, I’ve summarized the most important learnings below.

**Cornell Tech** is a partnership between Cornell University and Technion University (Israel). It was formed as a response to Mayor Bloomberg’s school challenge where his vision was to create an elite engineering and applied science graduate school to foster the growing tech scene in New York and compete with Silicon Valley. Insights include:

* The importance of the practical application in fostering tech and entrepreneurship. Currently the curriculum is 1/3 studio.
* Understand that despite planning things change. Cornell Tech created a culture of expecting and anticipating change. This has enabled them to adapt as things didn’t work out.
* In order to influence industry Cornell Tech has co-located faculty, graduates, start-ups, and businesses (including investors). This is called the Bridge. This is how Cornell Tech has achieved so many start ups.
* Build relationships across the political spectrum so that the institution can survive no matter who is in office.

**Carnegie Mellon University – Qatar** (CMU-Q). CMU-Q is a branch campus of Carnegie Mellon University. They were invited to set up a campus in education city by the Qatar Foundation and offer 5 bachelor’s degrees. Insights included:

* Make sure to match the degree with the needs of the industry. While CMU was brought in for a computer science degree, industry really wanted students who had studied information sciences.
* There was an expectation to collaborate within education city with no infrastructure or mandate to collaborate. This delayed the network effects that education city was expected to achieve.
* CMU-Q built adaptability into the model. When things didn’t work, they were able to change quickly without getting caught up in lengthy procedures.

**Carnegie Mellon University – Africa** (CMU- A) Also referred to as Carnegie Mellon University – Rwanda. CMU -A was set up at the request of Rwanda. It is a branch campus of CMU that offers master’s degrees in technology. Lessons learned include:

* Spend time to develop realistic models of student interest, student readiness, and student ability to pay. The Government of Rwanda has had to step in with increased funding because the numbers were off.
* The importance of faculty interaction with students. Part of the success of the program is given to the fact that faculty reside on campus and truly understand the issues of Uruguay and the region and how what they are teaching applies. Rather than delivering general information, they were able to customize it for students.
* Devising a system to understand how well students understand the material. Particularly in a blended learning environment or even online it can be difficult to ascertain mastery of subject until it is too late.

**Northeastern University – Silicon Valle**y. (NU-SV) Northeastern University in Silicon Valley was built to be a Northeastern Campus with master’s degrees in hubs of focused interest. There is a hub in Silicon Valley and one in San Jose. NU-San Jose is interesting because it is physically located onsite with IDT. Insights include:

* Not to get ahead of industry demand. There has to be proven demand before you put a product out there. The example given was engineering degree for driverless cars.
* Create “onramps” or entry points for those interested in tech but might not have studied it in the past. NU-SV ALIGN program currently has 45% female participation.
* Brand presence matters. Without it you can count on 5-7 years building it. The example of Babson university was given with all the money spent on advertising and yet still have small numbers.

**Yale-NUS College.** This is a joint venture between Yale University and National University of Singapore. Also the Singapore government is a partner and funds the whole initiative. Yale-NUS is meant to be a global Liberal Arts program that is truly innovative and international. Insights include:

* Understand who the brokers are that can devise innovative solutions when issues arise. For Yale-NUS, NUS President Tan Chorh Chuan played this role and smoothed things over when there were issues that could have dissolved the partnership.
* Be adapatable. The first week of school, the curriculum was way overloaded and faculty had to spend time to cut it down to a more reasonable amount of work.
* Define who you are early on and let that drive decision-making. In Yale-NUS case

**Spillover Effects**

With the advancement of knowledge-based economies, higher education has become more critical to the economies around the world. Universities have been well known to drive employment, innovation, and purchasing. They can develop spin-offs and reform a local and even a national economy (for example Cornell Tech). Governments around the world have invested in international education including branch campuses because there is the belief that international education can create competitive economies, raise the brand of the institutions in the country, attract foreign investment, enhance a soft power tool, and create more capacity. Economics is the externality that is most studied by government. Here are some of the indicators that are tracked:

* Tuition and fee revenue
* Number of jobs servicing international education
* Other spending including accommodation (about 1/3 of other spending), domestic transport, etc
* Tourism by friends and family
* Number of new business ventures created by international students
* Number of people employed at new business ventures

**Impact Evaluation**

Impact evaluation is a big undertaking and it should be done with clear vision, appropriate timing, and sufficient resources. There are a number of advocates who prefer not to do impact evaluations because of the cost, the mistakes, and the unintended consequences. Key evaluation questions for Uruguay Global include:

* Did the program produce the intended outcomes in the short, medium, and long term?
* Did the impacts reach all intended beneficiaries?
* What were the unintended impacts?
* What were the features of the program that really contributed to the impact?
* To what extent did the impacts match the needs of the beneficiaries?

There are many decision points for how to conduct and when to conduct an impact evaluation. My recommendation is to investigate Nimble RCTs early on to determine the implementation success and then longer term conduct full impact evaluations.

**Recommendations**

There are a number of recommendations stemming from this work. The most important is to truly understand the demand curves for both student and industry. Those curves must be established for the programming to work. Some other key recommendations include:

* Create a clear identity for Uruguay Global
* Focus on supporting women in tech
* Partner with a recognized brand
* Experiential learning is central to learning
* Be adaptable in implementation – international initiatives always run into speed bumps

**Case Study 1: Cornell Tech**

Website: https://tech.cornell.edu/

**Why I chose Cornell Tech:** Cornell Tech is clear in its goals to provide innovative graduate education that has great impact on the tech scene and entrepreneurship in New York. This is very similar to what Uruguay Global would like to accomplish and while size and scale is different, there are learnings to be had in the choices that Cornell Tech made.

**Section I: Description**

Cornell Tech arose from a 2011 competition launched by then mayor Michael Bloomberg. His vision was to develop an elite engineering and applied science graduate school that would foster the growing tech scene in New York that would compete with Silicon Valley. He wanted to develop a relationship between university and industry like Stanford and Silicon Valley.

The competition was fierce and there was a strong suspicion that Stanford would win given what it has done with Silicon Valley. In conversations I had, it seems like a major reason why Cornell won is not only the Technion partnership, but also that they had already been fundraising for this and brought $350 million to the table in donations.

Competitors included Cornell, Stanford, Carnegie Mellon, New York University (in consortium), Amity University, Columbia, consortium of 4 universities (Mt. Sinai, Rockefeller, SUNY, New York Genome Center)

From Cornell Tech’s marketing: “Cornell Tech is a revolutionary model for graduate education that fuses technology with business and creative thinking. Cornell Tech brings together like-minded faculty, business leaders, tech entrepreneurs and students in a catalytic environment to produce visionary ideas grounded in significant needs that will reinvent the way we live.”

It is clear that the intention is to create a new type of graduate school – one that isn’t focused on just siloed majors, but rather encourages interdisciplinary study as well as hands-on learning. While the school offers typical courses in business, engineering, science, and law, they have also created new disciplines. Connective media combines computer science with psychology and sociology in order to produce engineers who focus on humans.

Current masters’ degrees offered include:

* [Master’s in Operations Research and Information Engineering](https://tech.cornell.edu/programs/masters-programs/master-in-operations-research-and-information-engineering)
* [Technion-Cornell Dual Master’s Degrees in Connective Media](https://tech.cornell.edu/programs/masters-programs/technion-cornell-master-degree-in-connective-media)
* [Johnson Cornell Tech MBA](https://tech.cornell.edu/programs/masters-programs/johnson-cornell-tech-mba)
* [Master’s in computer science](https://tech.cornell.edu/programs/masters-programs/master-in-computer-science)
* [Master’s in electrical and Computer Engineering](https://tech.cornell.edu/programs/masters-programs/Master-in-Electrical-and-Computer-Engineering)
* [Master’s of Laws (LLM)](https://tech.cornell.edu/programs/masters-programs/master-of-laws-llm)
* [Technion-Cornell Dual Master’s Degrees in Health Tech](https://tech.cornell.edu/programs/masters-programs/technion-cornell-master-in-health-tech)

Cornell Tech offers PhDs in:

* Applied Mathematics
* Computer Science
* Electrical and Computer Engineering
* Information Science
* Operations Research
* Statistical Science

Cornell Tech also houses the Jacobs Technion-Cornell Institute at Cornell Tech. This is an academic partnership between the Technion Israel Institute of Technology and Cornell University and is actually a separate legal entity. While the institute houses the masters in health tech and connective media, it also features the Jacobs Runway Startup Postdoc program. This program helps PhD students commercialize their research and make it a reality. The Runway program is responsible for half of the startup companies employing about 100 people.

Cornell Tech started on a temporary campus – Google and was there for 5 years.

In terms of greater outcomes, the Cornell – Technion bid promised to achieve within 35 years:

* 28,000 new jobs (20,000 in construction, 8,000 related to academics and the school)
* 600 spinoffs
* $23 billion in economic activity
* $1.4 billion in taxes

**Section II: Basic Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year Founded** | 2012 | **Partners in Venture** | Cornell, Technion, NYC |
| **Degree Conferred** | Masters | **Faculty #s** | 30 |
| **Initial Enrollment** | 7/39\* | **Staff #s:** | N/A |
| **Enrollment overall** | 300 | **% International** | 42% for MBA |
| **Applications** | N/A | **Admit rate** | N/A |
| **Tuition** | $54,584\*\* | **Financial Aid** | Merit, need – different for each program |
| **Number of alumni** | 350 | **Research** | Yes |
| **Initial funding\*\*** | $400 million | **Funding Source** | Various\*\*\* |

\*The pilot class – all Cornell students was 7 students. The 1st real class was 39 students.

\*\* Cornell Tech MBA is $102,652

\*\*\*Initial funds: $100million and $300 million in real estate from the competition. $350 million private donation from Mr. Charles Feeney

2012 - $133 donation from Mr. Jacobs, founder of Qualcomm

2014 - $100 million from Bloomberg Philanthropies

When they moved to campus in 2015, they had 30 faculty, 300 graduate students. Note that 80% of students are master’s degree students. 20% are PhD.

Sample Alumni Careers:

About 70% sought full time employment, 10% started their own venture, rest returned to previous employers, sought additional education (medical school), pursued fellowships, or other personal interests. Everyone who has looked for a job has received at least 1 job offer.

|  |  |
| --- | --- |
| * Google | * Bloomberg |
| * Amazon | * Datadog |
| * Facebook | * Intersection |
| * Uber | * Oscar Health |
| * Microsoft | * Zoc Doc |

**Latest news:**

* Uru (Cornell Tech start up acquired by Adobe)
* Nanit receives $14 million in Series B funding

**Section II: Goals**

There are three sets of goals here – 1) for the city of New York 2) for the university. 3) for Technion. They aren’t mutually exclusive but should be considered together.

For the city:

* Job creation
* Startup creation
* Tax revenue
* Increase in activity/reputation of the New York tech scene

For the university:

* “The goal of the nascent Cornell NYC Tech campus is a simple one: be the pre-eminent graduate school for digital disciplines in the information age, the campus’s founding dean, Dan Huttenlocher, said during an Oct. 25 “University Spotlights” campus talk on “Iteration and Innovation in the Cornell Tech curriculum.””
* For Cornell Tech to become the pre-eminent graduate program two things must happen according to Dean Huttenlocher:
  + “Its doctoral programs and faculty must produce ground-breaking research on digital technology and its economic and societal impact.”
  + “Its master's programs must produce graduates that get excellent tech industry jobs or produce innovative companies.”
* “Supplying the city with talented employees is as important to the school as company formation”. It is noted that employers have given feedback that you can find engineers and you can find business grads, but it is difficult to find grads that have both skills.

For Technion as a partner:

* In the beginning the goal was really the same as Cornell’s and the city’s – Transform New York through technology.
* This was more of an academic exercise as they were not sure they would be picked. They were very interested in creating something with no constraints.
* Later on they started focusing more on their goals.

**Section III: Differentiators and/or Notable Features**

One notable difference in Cornell Tech is who it recruits both faculty and students. For ***faculty*** it is a requirement that they are entrepreneurial and have worked in industry. All of the first faculty were all founders of business and non-profits as well as being recognized academics in their field. Dean Huttenlocher also hired faculty with extraordinary research that are making waves and can attract students. In addition, departments don’t sit independently but are all mixed together. There are no offices. It is an open and interactive space. Finally, faculty are evaluated on 3 things: teaching, and engagement. For some the engagement means working with their own start up.

***Students***. While many institutions talk about the unique students they recruit, for Cornell Tech they are really looking for students who have the entrepreneurial mindset. Dean Huttenlocher makes a careful distinction between entrepreneurial and start up. The school is not necessarily looking for students who want to run out and start something up. Rather, it is the flexibility, adaptability, risk-taking, “do first ask for permission later” mindset that contributes to student success. In addition, students have to want to be uncomfortable because it will happen. For example, they open their projects up to public critique.

***Connection with local organizations***

Beyond the expected interactions such as the studio below, Cornell Tech has built interesting connections into the curriculum. There is a class called “Conversations in the studio” that brings in industry leaders, intellectual property experts, lawyers, artists and others. Speakers have included Arianna Huffington from the Huffington Post, Sara Levinson former President MTV, Eric Schmit Chairman of Alphabet, and David Brin an award-winning author of science fiction.

***Studio***

“The gap between education and practice can be wide. In the Studio, all of our students practice the actions of entrepreneurship, product design, management, prototyping and more”.

Nearly 1/3 of the curriculum is made up of the studio. In the fall semester there is a product studio. Five or six person teams come together to develop new products, services, and strategies for an organization. The teams are made of Cornell Tech students across the campus – business, engineering, law, computer scientists, etc. At the beginning the students and company negotiate whether the IP belongs to the company, the students, or the public domain. There is lots of interaction between the studies and the organization. After they’ve developed, tested, and finalized products, services, and strategies they present to the organization. The organizations include Google, American Express, Weight Watchers, Bloomberg, Robin Hood, and the Mayor’s office. The assignments are also varied. For Weight Watchers they asked the how they could tackle teenage weight loss in a way that would make them feel good about themselves.

In the spring semester students take startup studio. This is a semester that students form teams to create and actual startup. In preparation for the studio, students first take a class in startup ideas to understand how to brainstorm and evaluate ideas. This involves looking at personal pain points, market needs, etc. In the studio, the team picks an idea and do everything from a pitch deck to a prototype before presenting to VCs and angel investors. Throughout the entire experience, students are interacting with entrepreneurs to get advice and feedback. Most programs end an experience like this with a business plan. Cornell Tech thinks it is important to build the prototype and show it.

Note that the curriculum for the studios is not static. It is estimated that each year the curriculum changes by about 20%.

The real goal of start-up studio is product management. Students learn to work with a diverse group of people to bring an idea to fruition. This is a skill that many companies need. In addition, many teams turn their ideas into businesses.

For students serious about taking their product to market (about 20% of the class) Cornell Tech offers start up awards - $100,000 and a space in the Bridge (see below)

***Jacobs Institute***

This institute is a partnership between Cornell and Technion and is a separate legal entity from Cornell Tech. The idea behind the institute was to create a structure that would provide an unconstrained environment to help develop innovative ideas. The goal was to have the institute be an optimal distance from both their parents. An example of the unique set up is their master’s degrees. The master’s degrees have concentrations that are defaulted to expire in 7 years. The institute can re-evaluate and decide to keep them, but the default is expiration. They set it up this way because technology changes so fast and for many institutions it is difficult to get rid of programs.

***The Bridge (now known as Tata Innovation Center)***

The idea behind the bridge is to spur on the commercialization of technology and products by co-locating academia and industry. While this is not necessarily a new idea, what is new is that the complex houses diverse industries as well as recent graduate start-ups. In addition, the collaboration is encouraged through impromptu chats and other events. Cornell Tech is using 1/3 of the building while the rest is used for co-working space as well as large companies and startups.

“We’re trying to build a different type of tech ecosystem in a different city with a different character,” says Greg Pass, Cornell Tech’s Chief Entrepreneurial Officer and the former CTO of Twitter. “Stanford is really sitting adjacent to industry–it’s more natural and organic, the collaborations there. New York is a much bigger city, and it’s a much more diverse city. There’s so much more going on, which is wonderful, but it also requires a bit more design to make the collaboration happen. It can’t be as organic.”

*The U.S. Department of Commerce doesn’t plan to open a patent office at Cornell Tech, but it does plan to station a patent officer.*

Current tenants of the Bridge include a hedge fund, Two Sigma, who employees more than 500 engineers and wants to work with faculty on cybersecurity. Citigroup is located in the Bridge and is looking to work with students and faculty on emerging technologies.

Interestingly enough the city required that the bridge be in a different space than the academics. However, there could have been greater affects if the area is co-located with faculty. Graduates who are starting things up want to be near the faculty that taught them and advised them.

**Section IV: Partners and relationships**

Technion has been called “the beating heart of the Startup Nation” and is well known for graduating Nobel prize winners and incubating high-tech businesses. On the face of it Cornell and Technion are different. Technion is a public institution where Israelis pay $6,000 for a degree. However, they found they complemented each other well and had the same vision for the future model. The New York Times reported “Technion has the main asset Cornell lacked, especially when compared with Stanford: It is the engine of one of the world’s great high-tech business zones, with alumni running hundreds of companies near its Haifa campus”.

I am still scheduling an interview with Technion to understand the lessons from their side.

**Section V: Concerns and/or Criticisms**

From the main campus in Ithaca, two real concerns arose. Professions were worried about whether money was being diverted from Ithaca to Cornell Tech. The institution has had to create a firewall to alleviate any fears. The other concern was from the College of Arts and Science. There was concern that the university was drifting towards a heavy focus on business and technology.

There is a risk in bringing together academic and industry as they have different goals, cultures, etc. For example, companies need to make a profit while academia is more interested in the learning. This gets murkier when a student is working with a faculty member who might be advising the company the student is working with. Does the faculty member have the student’s best interest in mind? Cornell Tech tries to discuss these issues and set up appropriate safeguards.

**Section VI: Learnings**

Things that Cornell Tech and Technion got right:

1. Cornell Tech secured the money and funding they needed up front. This enabled them to really focus on execution and not divert attention to fundraising right away. It shortened the timeline to opening and also meant that they didn’t have to skimp on things.
2. At the groundbreaking they had De Blasio and Bloomberg on the same stage and singing the praises of Cornell Tech. They built solid relationships across the political spectrum so that Cornell Tech was an uncontroversial political play. This was and is crucial to the survival of Cornell Tech.
3. They have a unique philosophy. There is a willingness and almost an expectation that things will break and need to be fixed. They are always looking to improve and reiterate. They don’t get hung up that something didn’t work out as they expected, but rather dig deep and think about it. This means that no two students have the same experience and no two faculty join the same organization. As noted about 20% of the studio program changes each year.
4. Launching when it makes sense. The original plan had 9 master’s degree programs. They have launched 7 to date. One reason a program hasn’t launched is faculty hiring. The other program is a new program never seen before. It hasn’t launched because Cornell Tech is still confirming market demand. When evaluating the programs, it is important to evaluate both market demand and student demand. You can have programs that have one or the other and then it won’t be successful. Their thinking is to design a program around impact today and create the flexibility to move with the technology.
5. Ability to reiterate quickly (From Technion). Nothing ever goes as exactly as planned. Having the flexibility in resources and mindsets to change is critical. Without that it is difficult to be successful particularly in environments where you are trying brand new things.
6. It is critical to get the right people on board – particularly the leadership. In an innovative venture it is important to determine the right kind of leader. In an academic environment, there is a lot of mentorship that needs to happen – of faculty, students, staff. This is particularly true if you are thing to change the way people think about education or the way to do things. There is also working with other universities. You need the person that can launch both the right structure but also the right culture. This person should not be an administrator from a university because they’ll think like an administrator. “We know how to run a university”. Rather recruit someone who has been successful in creating a corporate structure in a small business and really thinks through the service model, customer focus and isn’t afraid to reinvent things when things don’t work out.
7. Make sure to balance the ability to change things with making it inexpensive.

Learnings from launching Cornell Tech and Technion:

1. With two well established and reputable universities, it is sometimes difficult to maintain an iterative and agile nature. Policies have already been established and may be difficult to change. For example, students that need vaccinations are put on a bus to Ithaca to get the free vaccination at Cornell’s Student Health. But does renting a bus, paying for gas, and the time it takes really make sense?
2. Community engagement is something that needs to be fostered and focused on. Cornell Tech’s administration reached out to the Roosevelt Island community early on and established the relationship. However, the entire institution didn’t own the relationship until they arrived on the built campus. This is seen as a missed opportunity.
3. Setting student expectations. It is known that students want predictability. However, in an environment of evaluation and reiteration it means that Cornell Tech shelves programs, adds programs, changes names of things. This is complicated by the fact that they are building on a foundation that is simultaneously being built.
4. It’s harder to recruit students than you realize. In Technion’s experience, a lot had to do with having a good story. If they had the story down, what made the opportunity special and unique and why candidates should consider it, they did well. If the story wasn’t quite together then recruitment did not do well. In order to develop the story, have faculty in place a year before you start. Let them build the vision and be part of the design. That will be a foundation for the story. The story should be consistent and not piecemeal.

**Section VII: Spillover Effects**

There are a number of spillover effects realized to date. Some were planned while others just happened.

First and foremost is the number of startups and the impact that has had. To date, Cornell Tech has produced 44 companies that have raised $46 million and employ 150 people, almost all in New York City. There have also been 2 acquisitions of companies created at Cornell Tech

Second, there has been a great buzz created about Cornell Tech and both Cornell and Technion have benefited from it. There were 1500 media stories related to the campus dedication alone that reached about 800 million people. That builds great brand awareness.

Third, youth in the city have benefitted from Cornell Tech. As part of the commitment to spur on K-12 tech education, Cornell Tech has partnered with a number of schools both on Roosevelt Island and throughout the boroughs. The goal is to create youth digital fluency and computational acumen. Activities include participation in STEM-oriented programming on and off its campus and partnering with HIRENYC employment program and develop partnerships for job placement and training. 50% of Cornell Tech students have volunteered their time in New York City schools to boost student interest in and knowledge of computer science. Finally, Cornell and Cornell Tech co-host student programming contests.

Fourth, teachers have benefitted from Cornell Tech. There is a teacher in residence program that enables 34 teachers to receive coaching in teaching computer science. Cornell Tech has also created education enhancement programs. This professional development gives teachers experience in adding tech into the curriculum. 110 educators, policy-makers, and others have attended the annual To Code and Beyond conference.

Fifth, more money is coming into Cornell. After a year of experience every Cornell Tech faculty member receives one jointly funded research project with a Cornell faculty member.

Technion added to the list of spillover effects:

* Number of graduate students studying in Israel
* Faculty collaborations
* Sending Technion faculty to Cornell for training
* Professional visits at Technion increased
* Exposure to lots of people including the public and donors
* At least 80 visits a month from Ministers or higher (Lot of attention)

**Resources Used:**

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Interviews

**Case Study 2: Carnegie Mellon University - Qatar**

Website: [www.qatar.cmu.edu](http://www.qatar.cmu.edu/)

**Why I chose Carnegie Mellon University Qatar:** While CMU -Q is an undergraduate institution located in education city Qatar, it was developed specifically to have an impact on the local economy. CMU-Q was chosen for their technology prowess.

**Section I: Description**

In 1995, His Highness Sheikh Hamad Bin Khalifa Al-Thani established the Qatar Foundation for Education, Science, and Community Development. It is currently chaired by Her Highness Sheikha Moza Bint Nasser.

Education City, one of the main achievements of the Qatar Foundation, was launched in 1997. The vision was and is to provide an area for innovation, teaching, and knowledge sharing between universities, other educational institutions, and industry. In a region with underemployment of people and high employment of foreign nationals, education city is an important initiative to broaden their skill base. Qatar has earmarked 2.8% of GDP for research and development.

In 2004, the Qatar Foundation asked Carnegie Mellon University to set up a campus in Education City. Qatar Foundation invited Carnegie Mellon to join Education City. Education City now has Carnegie Mellon University, Virginia Commonwealth University, Texas A&M University, Weill Cornell Medical College, Georgetown University’s School of Foreign Service, and Northwestern University along with other educational centers and institutions as residents.

CMU -Q offers five undergraduate majors including:

* Biological Sciences
* Business Administration
* Computational Biology
* Computer Science
* Information Systems

Students study 4 years full-time to earn a Bachelor of Science degree from Carnegie Mellon University. CMU – Q is accredited by Middle States Commission on Higher Education (MSCHE) Last year of accreditation is 2008.

Students are able to study at CMU in Pittsburg for one semester.

“Carnegie Mellon University attracts a certain type of student: motivated, inventive, and driven to make a difference. At Carnegie Mellon they develop the passion, connections and credentials to help them change the world.”

**Section II: Basic Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year Founded** | 2004 | **Partners in Venture** | Qatar Foundation |
| **Degree Conferred** | CMU Degree | **Faculty #s** | 64 |
| **Initial Enrollment** | 41 | **Staff #s:** | 90 |
| **Enrollment overall** | 413 | **% International** | 57% |
| **Applications** | 675 | **Admit rate** | 38.5% |
| **Tuition** | US$ 54,244 | **Financial Aid** | Merit, Need |
| **Number of alumni** | 679 | **Research** | 53 QNRF grants through 10 cycles |
| **Initial funding** | $50-$60mm/year | **Funding Source** | 100% Qatar Foundation |

Sample Alumni Careers:

|  |  |
| --- | --- |
| * Henkel | * Procter & Gamble |
| * Qatar Airways | * Qatar Shell |
| * McKinsey | * KPMG |
| * Siemens | * ExxonMobil |
| * General Electric | * Vodaphone |

***Connection with Partner (in this case Carnegie Mellon University):***

Study abroad, IMPAQT (Initiating Meaningful Pittsburgh and Qatar Ties) group, Business Case Competitions

***Latest news:***

#### May - [Meddy places tenth in Forbes Middle East’s ‘50 startups to watch’ list](https://www.qatar.cmu.edu/news/meddy-50-startups-to-watch/)

April – Carnegie Mellon Qatar signs MoU with the Jassim & Hamad bin Jassim Charitable Foundation

April – Top Qatar employers convene at Carnegie Mellon

**Section II: Goals**

#### Carnegie Mellon University Qatar goal is to focus on the development of students to provide human capital for a shifting economy. CMU’s role is to develop human capital for technology and entrepreneurial careers.

**Section III: Differentiators and/or Notable Features**

One of the largest differentiators is the location in education city. This hub of institutions is dedicated to educating the future generation and to help diversify the economy into a knowledge-based economy. While the hub is visionary, until recently there hasn’t been a set of structures or even a vision for how the institutions should act with one another – i.e. how to realize the gains from being located within an education city.

#### In addition, they’ve created the Qatar Science and Technology Park next door (<https://qstp.org.qa/vision-mission/>). The purpose of this park is to create science and technology innovation and research. They host many events, have an incubation center, start-up in residence program, etc. They also host tech companies from around the world including Microsoft, Rolls Royce, ExxonMobil. This is a tax-free area as a way to encourage companies to come. The foundation has created a $100million venture fund to help invest in start-ups.

#### CMU-Q engages the local community through a “Find an expert” on their website through the media page.

I think their website, while simple, really indicates a lot about CMU-Q. It’s about learning, research, and employability. Those are the featured sections.

**Section IV: Partners and relationships**

Partnerships are important to CMU-Q. They have a strategic partnership section of their website.

In particular, the agreement will see Al-Faisal and CMU-Q cooperate on scientific and strategic research which helps develop the business needs of Al-Faisal. The two organizations will share professional expertise, scientists and researchers in Business Administration, Information Systems and Public Policy. Al-Faisal’s senior leadership and managers will be able to access the leading education and training provided by CMU-Q. In return, the University’s students will be able to experience business at first hand through scholarships and placements in Al-Faisal’s range of international businesses and will be encouraged to join in the extensive community and CSR projects that Al-Faisal implements. The two organizations will also organize a series of joint conferences, seminars, and workshops.

CMU – Q enhances their relationships with government, industry, and partners through a series of executive education courses delivered by CMU-Q faculty. They have taught more than 300 professionals from their community of partners in the past 5 years and over 2000 people from the government and industry in Qatar. Sample courses include: Introduction to Business Strategy and Tactics, Business Negotiation and Conflict Resolution, and Introduction to Data-Driven Security.

**Section V: Concerns and/or Criticisms**

There are a few articles that giving Qataris these skills while beneficial for the economy also makes students mobile. The reports indicate that students are going to the UK and France to big consulting firms. In addition, while start-ups are in education city many end up leaving for more entrenched tech hubs. There were also reports that it is difficult to find a job in Qatar Science and Technology Park.

“I think there are ingredients for disruptive innovation in the country but they are not yet weaved together,” Mr. Bin Wasi. Sabih Bin Wasi, CEO of an academic planning and advising startup called Stellic, graduated from CMU in Qatar with a degree in computer science and entrepreneurship in 2015.

**Section VI: Learnings**

Things CMU-Q got right:

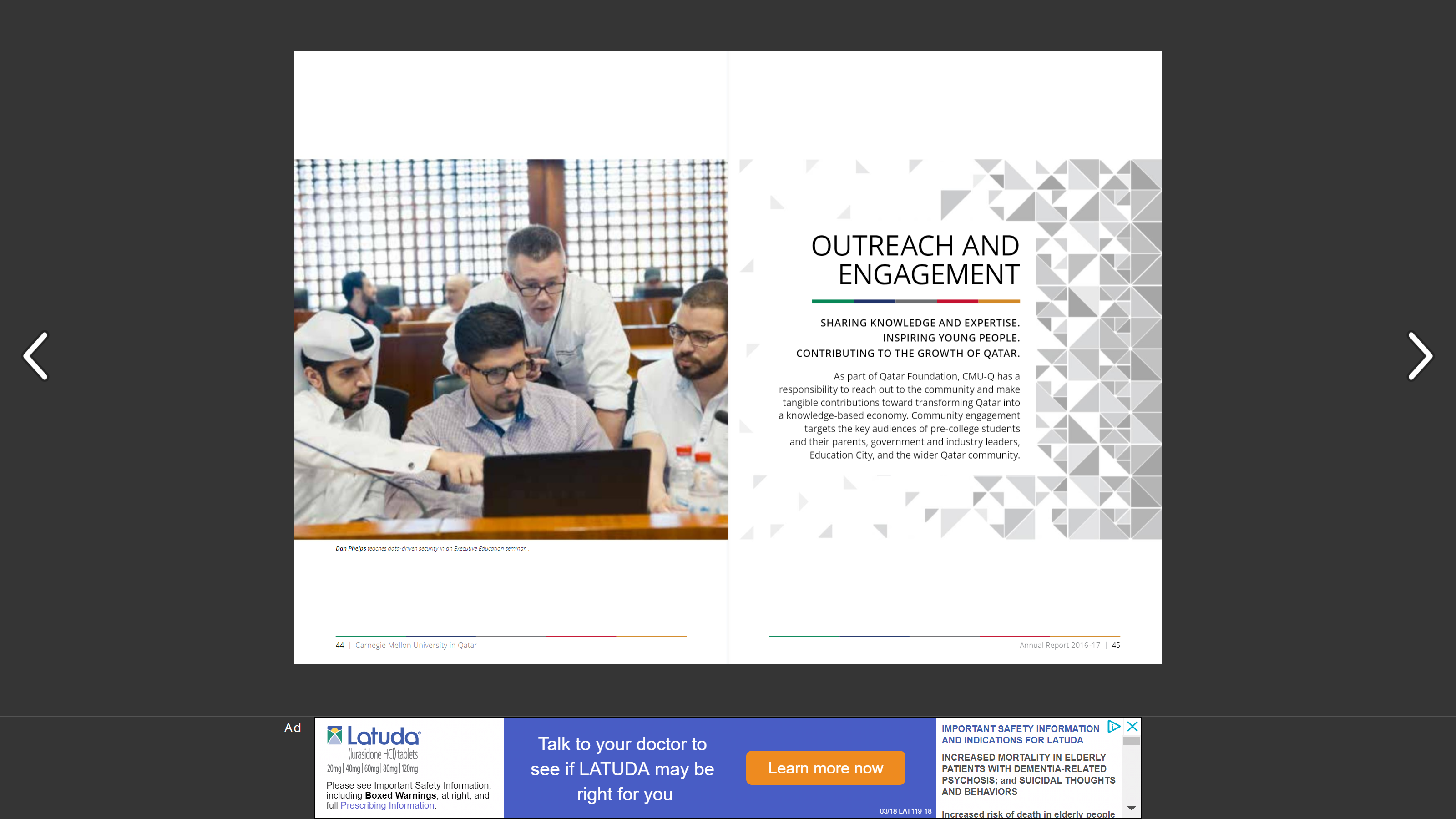
1. CMU made sure that CMU-Q stayed true to CMU. They truly made this Carnegie Mellon in Qatar. This means the standards are the same, the degree is the same, and many things are done through Pittsburgh. Some branch campuses water things down when they set up abroad. Carnegie Mellon wanted to make sure to maintain its reputation as well as the quality of education.
2. Flexibility. CMU-Q built adaptability into the model so that they could adapt as needed. There was a vision of how everything works and when things didn’t work out, they didn’t need to pull out. Rather they were able to make changes as needed. For example, in the original model they thought they would bring faculty from CMU Pittsburg. It turns out the faculty didn’t want to uproot for 1-3 years. Therefore, they ended up specifically hiring faculty specifically for the Doha campus. The process to hire faculty is the same as CMU Pittsburg. It is a rigorous process.
3. The Deans have always had long histories from Carnegie Mello (“Carnegie Mellon to the core”). There was temptation to hire from the local market, but the desire to make sure it was a Carnegie Mellon experience meant making sure the dean was from Carnegie Mellon.
4. The partnership with Qatar Foundation works very well. They are really hands on when it comes to money and support in the community. However, when it comes to curriculum and admissions they trust CMU-Q to do the right thing. Because of this CMU-Q can be true to their model.

Things that CMU-Q learned:

1. Qatar Foundation would like the partner universities to be more coherent. Yet there is no structure of vision of how they would like them to interact. The institutions on their own have figured out how to work together and while it works, it would have been great to have a vision early on and bake it into the model.
2. The Qatar Foundation asked Carnegie Mellon University to run a computer science degree. Carnegie Mellon’s computer science program is among the best in the world. However, it became evident that they really needed an information systems degree instead. It was a better fit for what the economy and industry needed. CMU- Q recommends doing detailed research into what it means to offer a degree in X before actually launching it. Look into whether it is what companies and organizations need as well as what students want.
3. They charge CMU Pittsburg prices and some students will graduate with debt. CMU-Q must make sure that the job they are able to obtain afterwards makes economic sense. Some students could graduate with $200K debt.

**Section VII: Spillover Effects**

While CMU-Q’s main mission is to educate and prepare students to be productive citizens, they are also focused on creating spillover effects. This is explicit in the annual report:



CMU-Q runs a slate of workshops for secondary students in each of the four program areas to give student a better idea of career possibilities and majors.

Alice Middle East is a 3D software program that teaches students programming. CMU-Q and the government will roll this out to all high schools with an ICT program next year.

CMU-Q teamed up with Boeing to offer daylong workshops to secondary students exploring robotics, cryptography, and computational thinking.

Students participated in Summer College Preview Program, CMU-Q premiere summer program

Information technology workshops for high school teachers and counselors. The workshop outlined Information Systems major and potential career paths.

Young Entrepreneur workshop. 42 students interested in entrepreneurship attended the workshop to learn more about it

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Interviews

**Case Study 3: Carnegie Mellon University - Africa**

Website: https://www.africa.engineering.cmu.edu/

**Why I chose Carnegie Mellon University Rwanda:** CMU – Africa is a great example for Uruguay Global in that it is a government and a university working together to address the shortage of technical talent in Rwanda and the region.

**Section I: Description**

Carnegie Mellon University was courted by the country of Rwanda to come set up a branch campus. It was established in 2011 and is the only US research university offering master’s degrees on the ground in Africa. The vision for CMU-Africa was jointly developed by the government of Rwanda and CMU to address the shortage of high quality engineering and technology talent to celebrate development in Africa.

CMU is clearly committed to developing an international presence in technology and engineering. “Mr. Khosla [Dean of Carnegie Mellon University’s School of Engineering] said that the international efforts bolster Carnegie Mellon's prestige and that American students benefit with opportunities to study abroad and understand other cultures; such exchanges will help them develop engineering ideas and products suited to the needs of other parts of the world, including Africa.”

Part of the reason CMU invested in this initiative is how visionary and aspirational the opportunity was. Their conversations with the President of Rwanda showed them that not only was this a serious initiative, but very innovative.

The University planned to initially offer a M.S. in Information Technology and a M.S. in Electrical and Computer Engineering. The initial faculty had expertise in energy systems, big data and mobile networks. Additionally, the university would collaborate with Rwanda to develop executive education programs, PhD programs, incubator, and a research center.

The program is expected to grow exponentially in the coming years with support from sponsors such as The MasterCard Foundation and Smart Africa. CMU recently received $10.8 from Mastercard Foundation to support 125 academically talented and economically disadvantaged students from Sub-Saharan Africa.

In 2018, they are opening a new campus that is part of Kigali Innovation City. The new campus is funded by the African Development Bank at a cost of Rwf 9.5 billion. Other residents in Kigali Innovation City include African Leadership University (ALU) and African Institute for Mathematical Sciences (AIMS).

**Section II: Basic Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year Founded** | 2011 | **Partners in Venture** | Government of Rwanda |
| **Degree Conferred** | Masters | **Faculty #s** | 14 |
| **Initial Enrollment** | 40 | **Staff #s:** | 14 |
| **Enrollment overall** | N/A | **% International** | N/A |
| **Applications** | N/A | **Admit rate** | N/A |
| **Tuition** | $46,000\* | **Financial Aid** | Yes\*\* |
| **Number of alumni** | 100 | **Research** | Yes (85 publications) |
| **Initial funding** | $95 million over 10 years | **Funding Source** | Government of Rwanda |

\*Through a mixture of scholarships from CMU and the Government of Rwanda tuition is $16,000 for African scholars. Students from East African Community (EAC) receive a 50% scholarship making the tuition $8,000.

\*\*[Smart Africa committed to support 30 students.](https://rwadmissions.com/smart-africa-commits-support-30-students-cmu-africa/) For all scholarships see Appendix A.

Sample Alumni Careers:

|  |  |
| --- | --- |
| * IBM Research | * PhD at Dartmouth |
| * Rwanda Revenue Authority | * GE |

**Connection with Partner (in this case Carnegie Mellon University):**

Possibility of studying in Pittsburg for 1 semester.

**Section II: Goals**

From the website:

“CMU-Africa’s vision is to educate and empower the next generation of African leaders and innovators by delivering a world-class educational experience. Our mission is to produce creative and technically strong engineers, who have been trained in the African context, and prepared to make transformative impact in their communities and the world.”

The initial enrollment goals were 45 in the first year with 150 by 2017.

**Section III: Differentiators and/or Notable Features**

CMU-Africa is the first US research institution with a campus based in Africa with full time faculty and on the ground operations.

Faculty are trained in Pittsburgh to understand the level of rigor, teaching style, and institution’s curriculum so that students in Rwanda have a similar experience to students in Pittsburg

CMU-Africa like CMU – Qatar works with the local institutions to increase and improve the pipeline for their degrees.

**Section IV: Partners and relationships**

The Rwanda Revenue Authority (RRA) and Carnegie Mellon University – Africa have a Memorandum of Understanding (MoU) that allows the two institutions work towards enhancing data science capabilities in tax administration.

**Section V: Concerns and/or Criticisms**

1. Potentially a controversial partnership. “The collaboration with Carnegie Mellon is part of Rwanda's effort to transform itself following the genocide that devastated the country in 1994. Rwanda's president, Paul Kagame, has been accused of an authoritarian-style rule, but he has attracted foreign investors to the East African nation and sought to innovate in its economy.”
2. Fees. African nationals are charged $16,000 per year through scholarships given by both CMU and the Government of Rwanda.
3. Revenue. Although the government of Rwanda was to give $95million over 10 years the projected budget was a decreasing scale. As the Government gave less, the financing of the university would be sustained by tuition revenue. After 10 years the government would exit the financing arrangement. In 2017, with 150 students, tuition revenue was projected to be $16 million. However, this is not what happened:
   1. In 2017, the enrollment was 75.
   2. The tuition revenue was $5.7million (not $16 million as projected).
   3. The government has contributed to CMU-Africa USD47.6 million from 2012 to 2017.

**Section VI: Learnings**

Things CMU-Africa got right that contributed to success:

1. Kept it as a CMU program. They went in with everything as CMU – the curriculum, the ways things run, etc. They weren’t trying to create something new or hybrid, but really trying to bring the quality, rigor and experience of a CMU program to Africa. This makes them unique.
2. Faculty were hired as part of the CMU hiring process. Everyone is CMU faculty member and go through the same review process, tenure process, etc. The faculty also attend training in Pittsburg.
3. Faculty resides on campus. This is critical. Fly in faculty miss lots of opportunities to truly understand how to make curriculum relevant to the local situation. Faculty who reside at the campus over time truly appreciate the opportunities and challenges and can adapt the curriculum so that it is relevant to the situation. The learning becomes more impactful because it is more relevant and applicable. Along the same lines “Bruce Krogh, the inaugural director of CMU Africa, underscored the university's presence as "the only way to understand the region's technology needs." He explained, "Creating a long-term education program is critical, because it gives students time to analyze problems and develop solutions in the context in which they occur."”
4. They do allow students to take synchronous online classes with other campuses such as Doha. However, it is a live broadcast. CMU Africa’s advice is that if you offer online learning, you need to make sure you close the loop to make sure that things are being understood. They found with their teaching that without tight feedback from students they could go through a semester and not realize that the students weren’t connecting with the curriculum. Note that students are only allowed to take one course online. Students love it because they get the sense that they are part of Carnegie Mellon University as a broader concept.
5. Having a presence at the home campus helped facilitate progress and things go well. The ability to have someone go meet face to face with the Dean really sped up the process.

Things that CMU-Africa learned:

1. Operating at a distance with less frequent communication than face to face increases the possibility of misunderstanding. CMU Africa learned not to make assumptions with partners and home campuses. It is easy to make decisions and not inform others. They actively manage exchanges.
2. Working with a government many things are stove piped. In the beginning it was difficult to understand all the parties that needed to be in the room to have a conversation. Therefore, there had to be multiple rounds of conversations and it took forever to get things processed.
3. Enrollment. Enrollment is foundational to the whole venture. In modeling enrollment make sure that interest is present for both students and employers. In addition, investigate ability to pay. This is different than willingness to pay. Both of these things should inform a realistic enrollment model. It would be preferable to have financial resources lined up in case the ability to pay is low.

**Section VII: Spillover Effects**

CMU-Africa was the lead partner of the Transform Africa Summit 2018 (TAS2018). The Smart Africa flagship event hosted guests from May 7th – 10th 2018, where delegates engaged in conversations around Africa’s digital revolution,

Four students from Carnegie Mellon University Africa (CMU-Africa) will be traveling to San Jose, California to attend the Facebook Developer Conference F8 on April 18-

CMU-Africa hosted the first Women Techmakers event in Kigali on 21st April 2018. The event is part of a series of worldwide Google [Women Techmakers](https://www.womentechmakers.com/) Summits, from Los Angeles to Sydney.

In 2017, CMU – Africa celebrated its 100th graduate. Collectively, this class “completed over 23,000 hours of work with industry through internships, practicums and class projects, and over 50 research and in-class projects, at least six of which were published in notable international research journals. They have competed in several local and international competitions, including the Nelson Mandela Africa Grand Challenge in Arusha and the Hult President’s Challenge in Dubai.”

**Resources Used:**

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<https://rwadmissions.com/carnegie-mellon-university-rwanda-cmur-scholarship/>

Interviews

**Appendix A: Table of Scholarships**

|  |  |  |
| --- | --- | --- |
| **Financial Aid Source** | **Eligibility** | **How to Apply** |
| The MasterCard Foundation Scholars Program   The Scholars Program at CMU provides a holistic educational experience to students by supporting them through comprehensive scholarships, leadership development, career guidance, community service projects and lifelong engagement through our strong alumni network. | * Have obtained admission to CMU Africa * Be a citizen of an African country * Have an exceptional academic record * Have demonstrated leadership potential * Have demonstrated commitment to give back to their community * Have demonstrated commitment to transforming Africa * Come from a disadvantaged background | CMU’s financial aid form will be sent to students who are admitted to CMU.    The Scholars Selection Committee will select awardees in accordance with university policies and procedures. |
| Smart Africa Scholarship Fund   The Smart Africa Scholarship Fund makes CMU’s programs more accessible to Africa’s brightest young minds, equipping them with the knowledge and experience to significantly contribute to Africa’s technological transformation. | * Have obtained admission to CMU Africa * Be a citizen in one of the Smart Africa member states * Have an exceptional academic record | CMU’s financial aid form will be sent to students who are admitted to CMU.    The Smart Africa Secretariat will select awardees in accordance with their policies and procedures. |
| MINDS Scholarship for Leadership Development  Mandela Institute for Development Studies (MINDS) offers scholarships to Africans who wish to pursue post-graduate studies within Africa, outside of their own countries. Through tailored leadership development activities, the MINDS aims to nurture leaders who have a continental development mindset; leaders who will facilitate greater cohesion and cooperation between African countries. | * Have obtained admission to CMU Africa * Be a citizen of an African country, residing in any African country; * Have obtained at least 70% in each subject/ course in the last two completed years of study; * Demonstrated leadership potential | Online application |
| Government of Rwanda (GoR) Scholarships   The GoR offers a 50% scholarship to qualified students from the East African Community. | * Have obtained admission to CMU Africa * Be a citizen of any country in the East African Community | CMU’s financial aid form and Rwanda Education Board application will be sent to students who are admitted to CMU. |
| Government of Rwanda (GoR) Loans  Qualified Rwandan students receive a GoR 50% scholarship and 50% tuition loan. Living stipends are also available under the loan program. | * Have obtained admission to CMU-Africa * Be a citizen of Rwanda | CMU’s financial aid form and Rwanda Education Board application will be sent to students who are admitted to CMU. |
| Innovators Forward Fellowship Fund (IFFF)   IFFF provides financial support for graduate students with an exceptional academic record and demonstrated leadership potential. | * Have obtained admission to CMU Africa * Be a citizen of an African country * Have an exceptional academic record * Demonstrated leadership potential | CMU’s financial aid form will be sent to students who are admitted to CMU.    The Director of CMU-Africa will determine the amount of the fellowship and will select awardees in accordance with university policies and procedures. |

**Case Study 4: Northeastern University – Silicon Valley**

Website: www.northeastern.edu/siliconvalley/

**Section I: Description**

Northeastern has been creating branch campuses for over a decade. Silicon Valley represents a new model for Northeastern. In thinking about place, Northeastern decided to locate certain degree and certificate programs in close proximity to industry. These are called “hubs” and they currently have two hubs. The first hub is in San Jose and the second in Silicon Valley.

Northeastern Silicon Valley offers a number of different types of programs:

* Master’s degrees
* Certificates
* Align program – this enables students from different backgrounds to transition into technology careers
* Micro-credentials.
* Semester in Silicon Valley (undergraduate)

Academic areas include:

* Business
* Computer Science
* Leadership & Management
* Analytics
* Science and Technology

**Section II: Basic Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year Founded** | 2015 | **Partners in Venture** | IDT |
| **Degree Conferred** | Masters, certificate, micro credentials | **Faculty #s** | N/A |
| **Initial Enrollment** | N/A | **Staff #s:** | N/A |
| **Enrollment overall** | N/A | **% International** | N/A |
| **Applications** | N/A | **Admit rate** | N/A |
| **Tuition** | Depends | **Financial Aid** | Yes |
| **Number of alumni** | N/A | **Research** | N/A |
| **Initial funding** | N/A | **Funding Source** | Northeastern |

Much of the above information is not available publicly. Northeastern is meeting their enrollment goals and that they admit a good number of international students.

Connection with Partner ():

See below

**Section II: Goals**

Northeastern’s goal is to create a global university system. This is different than a network. In networks there is usually hub and spoke model. Northeastern wants to move away from that idea and create something like the UC system. They want to think of each node separately and think about what each note contributes to the system. For example, one node might be true experts in entrepreneurship and they should figure out how to export that to other nodes.

**Section III: Differentiators and/or Notable Features**

1. Northeastern is developing unique hubs. These hubs are networking areas where a student takes classes, attendees a meet up event or a presentation.
2. Northeastern is invested in bridging people from outside of STEM. The program they offer is called ALIGN and allows anyone from a non-STEM background to complete a bridge program and a master’s in computer sciences in 3 years.
3. Northeastern has created a model that is nimble. To thrive in Silicon Valley and technology you have to be. Courses need to represent current topics and technologies including machine learning, augmented reality, and Internet of Things.

“You need to be very current in what you offer,” he said.  "If you follow the normal institutional process it would be time-consuming to go through the course approval process, but if you want to be relevant, can we offer this now? That puts a lot of strain on established academic processes of how you establish credentials. IoT is becoming one of the biggest market forces at this point, so we decided two months ago we would offer a certificate starting in January.”

1. Northeastern has co-located with IDT. Northeastern occupies a floor of the company’s campus in San Jose. Employees are able to pursue degrees right at work. Faculty collaborate with the company on research. Other students are able to participate in internships, etc.

**Section IV: Partners and relationships**

From the website:

“Northeastern works with 3,000 corporate partners to better match curricula and training programs to high-demand STEM (science, technology, engineering and math) jobs.”

**Section V: Concerns and/or Criticisms**

**Section VI: Learnings**

Things that Northeastern did that contributed to success:

1. Brand presence matters. If you don’t have a national brand it can easily take 5-7years to develop a brand in the market. For Silicon Valley there are already strong brands (Stanford, UCs, etc) – it is a tough market to break into. It was noted that Babson has spent lots of money trying to create brand presence to the point where it’s questionable how they can recover cost.
2. They really defined the strategic fit. They didn’t develop the campus just to have a campus on the west coast or an innovative model. Rather Northeastern really thought about how this campus would fit into the larger goals and mission of the institution. Northeastern looks for opportunities to address gaps between industry and available skilled talent. They conduct months of market research both primary and secondary to understand how Northeastern can help address demand and supply gaps and compete with other institutions. This includes understanding both employer demand and student demand
3. Northeastern understood what their appetite financial was. Starting a campus includes a certain amount of sunk costs. Understanding the risk profile and financial implications is important. Deciding ahead of time when to pull the plug with an initiative is important.
4. Northeastern kept the flexibility to pivot. It is hard to predict all the issues that you’ll run into. While you can prepare as much as possible you operate in reality. Sometimes you think a program will work in the marketplace and it turns out that it doesn’t. These campuses are much more complex than they seem.
5. ALIGN. Northeastern was keen to help those who don’t come from a tech bachelor’s degree to have the ability to pursue a tech masters. This bridge and master’s program is a 3 year program. In addition to increasing the talent pool, Northeastern has also increase female participation. Over 40% of students enrolled in ALIGN are female.

Things that Northeastern learned:

1. They learned to lag the industry. Two years ago they knew that IoT was really becoming popular. They considered offering a degree in it as companies told them they couldn’t find enough professionals. They decided to offer a certificate and bootcamp with CISCO instead. This has worked better than a degree program. They also considered offering programs in engineering for driverless cars because of the hype around the technology. However, when they spoke with employers they heard that they don’t need AI engineers, but rather they need testing technicians (vocational program). Udacity offers the only driverless car engineering program in the world.
2. This was learned through the main campus as well, but it’s important to understand how to engage online. If a cohort has 90% drop-off in the first term, then something is wrong with the model. It takes truly understanding the student and what the outcome they are looking for.

**Section VII: Spillover Effects**

Northeastern has focused on clusters and developing hubs that will foster innovation. A critical component of this is close relationships with industry. This is core to their model.

Growth of female tech students through their ALIGN program.

**Resources Used:**

<http://www.northeastern.edu/siliconvalley/>

<https://www.forbes.com/sites/tomgroenfeldt/2016/06/14/northeastern-u-opens-in-silicon-valley-with-stem-courses/#48dc1454210d>

<https://www.insidehighered.com/news/2015/03/30/northeastern-u-unveils-silicon-valley-branch-campus>

<http://news.theregistrysf.com/northeastern-university-expands-silicon-valley-presence-san-francisco-micro-credential-program-computer-science/>

<https://www.idt.com/about/press-room/idt-collaboration-northeastern-university-silicon-valley-announces-partnership-world-stage-racing-s>

<https://campustechnology.com/articles/2017/02/02/northeastern-university-silicon-valley-launches-new-program-to-build-iot-skills.aspx>

<https://www.bizjournals.com/losangeles/prnewswire/press_releases/California/2018/02/28/NY25859>

Interviews

**Case Study 5: Yale-NUS College (Singapore)**

Website: [www.yalenus.edu.sg](http://www.qatar.cmu.edu/)

**Section I: Description**

Yale-NUS is a joint venture between Yale University and National University of Singapore. The agreement was signed in 2011 and is the first Liberal Arts institution in Singapore. While most Singaporean higher education is built on the British model of education, Yale-NUS is meant to provide a different kind of option for Singapore students and ultimately employers.

**Section II: Basic Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year Founded** | 2011 | **Partners in Venture** | Singapore Govt, NUS |
| **Degree Conferred** | NUS Degree | **Faculty #s** | 100 |
| **Initial Enrollment** | 155 | **Staff #s:** | 90 |
| **Enrollment overall** | 1000 | **% International** | 40% |
| **Applications** | Over 11,000 year 1 | **Admit rate** | 3% Year 1 |
| **Tuition** | S$42,800 | **Financial Aid** | Merit, Need |
| **Number of alumni** | ~300 | **Research** | Yes |
| **Initial funding** | N/A | **Funding Source** | 100% Singapore Gov’t |

\*For international students. S$20,000 for Singaporeans.

Sample Alumni Careers:

|  |  |
| --- | --- |
| * Harvard Graduate School | * Own startup |
| * Anderson Consulting | * Goldman Sachs |
| * BCG | * Ministry of Foreign Affairs |
| * Rhodes Scholarship | * Lee & Lee law firm |

Connection with Partner ():

**Section II: Goals**

The goal of Yale-NUS is to create a global liberal arts program at the crossroads of Asia. Since Yale-NUS was created from scratch, the ultimate goal was to create a university for the 21st century. We are looking to be innovative, bold, and experiment. The learnings are actively shared with he parent institutions and inform their policies and ideas.

**Section III: Differentiators and/or Notable Features**

* Truly global in nature. 1st year students have two international experiences before the end of their first year. The curriculum was developed from scratch in order to create a truly global curriculum.
* Experiential learning is core to the program and there are many opportunities to take advantage of it
* At least 40% of the student body is international creating a diverse atmosphere. The college also hosts international faculty and an international board.

**Section IV: Partners and relationships**

NUS is the main partner and Yale-NUS is considered to be an autonomous unit within NUS. However, Yale-NUS has effectively partnered in their study abroad and career programs. For example, the NGO bootcamp had Salesforce Foundation as one of the sponsors and participants.

Also, as Yale-NUS is funded by the Singapore government, there is a very close relationship with the government. We’ve been fortunate to host the Minister of Education on our campus a number of times and discuss spillover effects with the Minister.

**Section V: Concerns and/or Criticisms**

During start up phase, there was active criticism about the freedom of speech in Singapore and how that would play out on a Liberal Art college campus. Most of the questioning came from Yale University faculty. To be clear, Yale-NUS College has a policy of academic freedom.

**Section VI: Learnings**

Things Yale-NUS did that helped it to succeed:

* **Start early.** Yale-NUS spent the first year developing curriculum. This enabled innovation and faculty ownership of the program. It also gave the institution time to work out the kinks.
* **Emphasize the collaboration between Singaporeans and International.** Because the institution was so international, we had to collaborate between all different ideas, cultures, etc. This was recognized early on and we were encourage to learn other perspectives and approaches before deciding what was best for the institution.
* **Little divide between faculty and administration.** Yale-NUS created a culture early on that promoted collaboration across the institution. This enabled us to develop signature programming and create greater community.
* **Interdisciplinary encourages**. Yale-NUS went to great lengths to promote interdisciplinary learning. Part of the core curriculum is taught by theme rather than discipline, there is team-teaching with faculty from other disciplines, and departments don’t exist at Yale-NUS.

Things Yale-NUS learned:

* **Identity.** It took some time to really understand who Yale-NUS was trying to be. The question of whether we were “Yale in Singapore” or a “liberal arts institution like Williams in Singapore” came up again and again. It took awhile to develop a clear path and this meant other decisions were pushed off until this was decided.
* **Manage young faculty enthusiasm.** Early on we had a significant amount of young faculty which was a big advantage for the college. Their enthusiasm and energy really carried the college. However, each of them overdid it with the curriculum and when the college first opened it was clear that students couldn’t handle the workload.

**Section VII: Spillover Effects**

Yale-NUS worked with the Ministry of Education to understand the desired spillover effects. Interestingly enough, these effects changed with different ministers. However some of the areas we focused on:

* Spreading the concept of liberal arts – not only for the benefit of our institution but also so students understood liberal arts institutions in the US. Within a few years junior colleges (last 2 years of high school) were using the term liberal arts in their curriculum.
* Help strengthen teacher recommendations. Recommendations are not necessarily required for Singapore applicants, so the concept was one faculty were still working with.
* Create a pathway for polytechnic students to be able to apply to universities. Rather than go straight into the workforce, give polytechnic students the ability to earn a bachelor’s degree.
* Share our pedagogy with teachers in secondary schools.
* Supply Singapore with talented, skilled, employees

**Additional**

It is interesting to note that Yale-NUS started without a facility, faculty, president or list of majors. Admissions was the first team formed in April 2011 and they recruited students simply by talking about the power of liberal arts. As time went on more faculty were identified, the President was identified, and we found our temporary campus on NUS’ campus. However, it was the power and the passion of liberal arts as well as the opportunity to start a college that really connected with students.

**Resources Used:**

Interviews

**Spill Over Effects/Externalities**

**Introduction.**

With the advancement of knowledge-based economies, higher education has become more critical to the economies around the world. Universities have been well known to drive employment, innovation, and purchasing. They can develop spin-offs and reform a local and even a national economy (for example Cornell Tech). Governments in UAE, Singapore, Israel and China have invested in international education including branch campuses because there is the belief that international education can create competitive economies, raise the brand of the institutions in the country, attract foreign investment, enhance a soft power tool, and create more capacity.

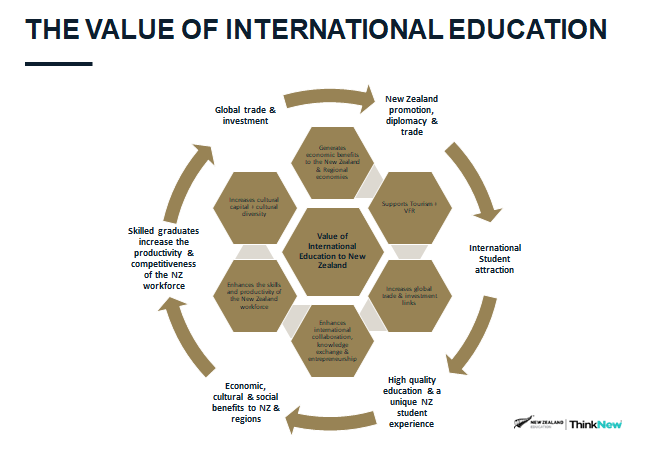
**Economic**.

While there are many reasons to invest in international education, economics is always included as one of the reasons and perhaps the top reason.

It has long been understood that higher education is a driver of economic competitiveness, but more recently countries have started to look at how international higher education affects local, regional, and national economies. Countries with significant international education experience have leveraged higher education’s ability to add through the economy by international students, faculty research, developing companies, etc. Other countries have used international education to advance their economic strategies either with or instead of their domestic institutions. These countries are using international education to keep pace or catch up with surrounding economies.

Many countries calculated the benefit to their economies that international students bring, however, Education New Zealand has brought a particular rigor into looking at the spillover effects. For this reason I’ll be highlighting New Zealands experiences.

To start with, New Zealand has depicted the value of international education in a cycle detailed below:

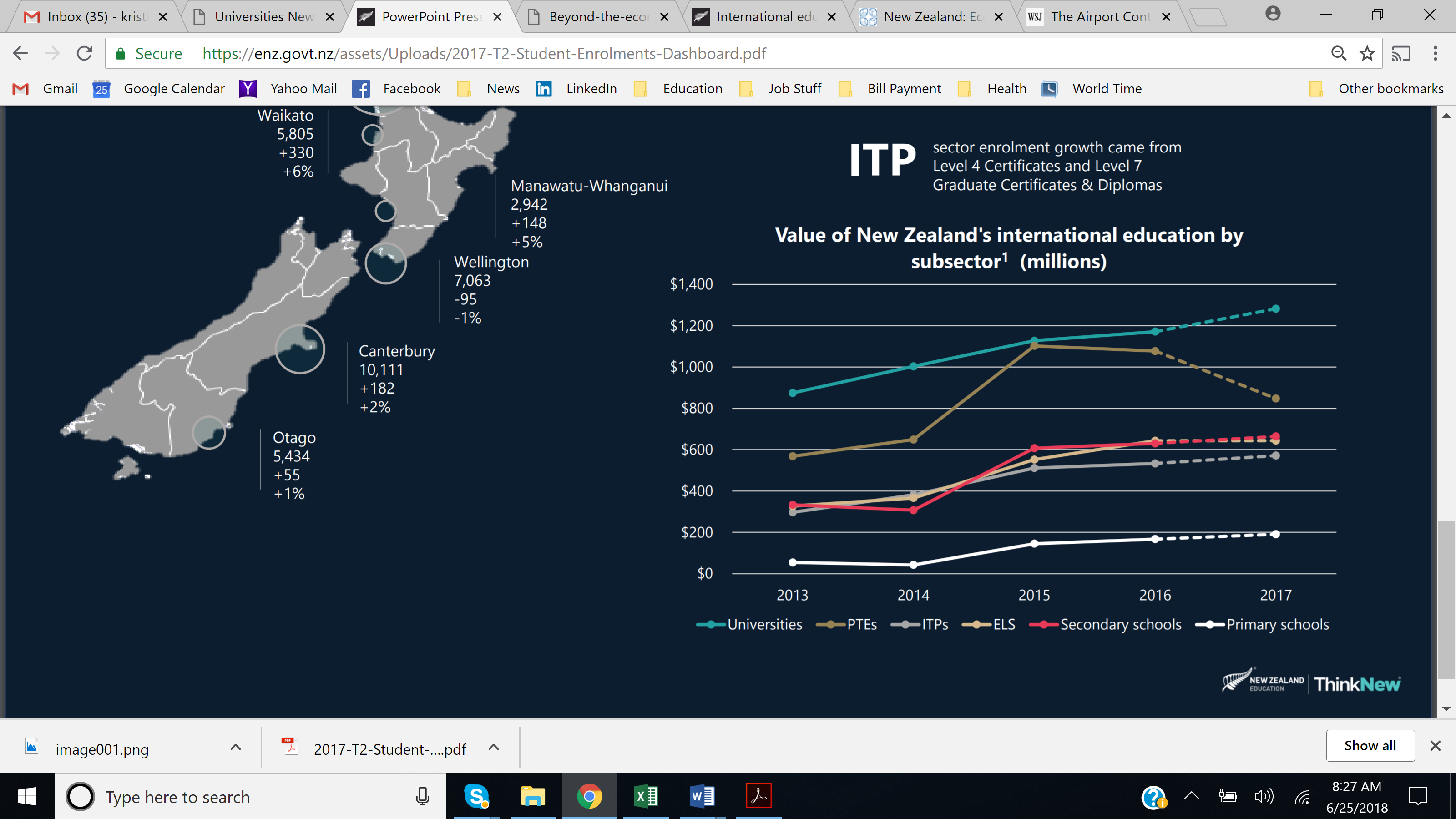


As stated in the May 2018 press release for the report on the broader value of international education, “The onshore economic impact of international education as an industry was last measured in 2016 at $4.5 billion. It also supports more than 33,000 jobs across New Zealand.” In 2017, the value dropped to $4.4 billion with 33,000 jobs. About 15,000 of the jobs were created directly with indirect employment making up the remainder. Most of the economic value is due to students coming to study in New Zealand ($4.2 billion) with $242 million derived from education services offered abroad. The driver in the drop of value from 2016 to 2017 was due to the Private training establishments (see below). Most notably there was almost a 50% drop in India and Philippines as send markets. Overall, education is New Zealand’s fourth largest export.

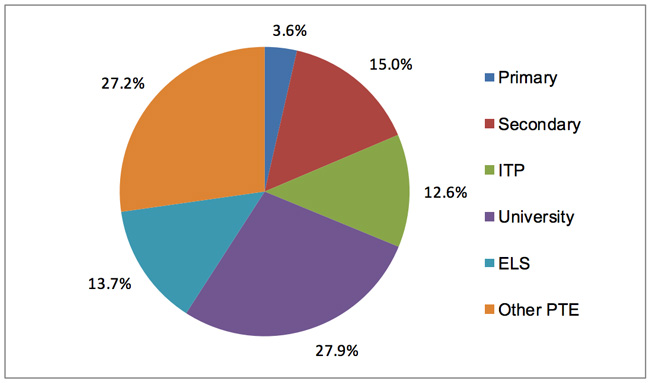
***Value of international education by sector of education:***

(Note: PTE – Private Training Establishment, ITPs – Institutes of Technology and Polytechnics, ELS- English Language providers)

If we breakdown the total value by education sector, we see that universities are driving most of the value for the economy with over $1.2 billion projected in 2017. Institutes of Technology and Polytechnics are forecasted to add almost $600 million.

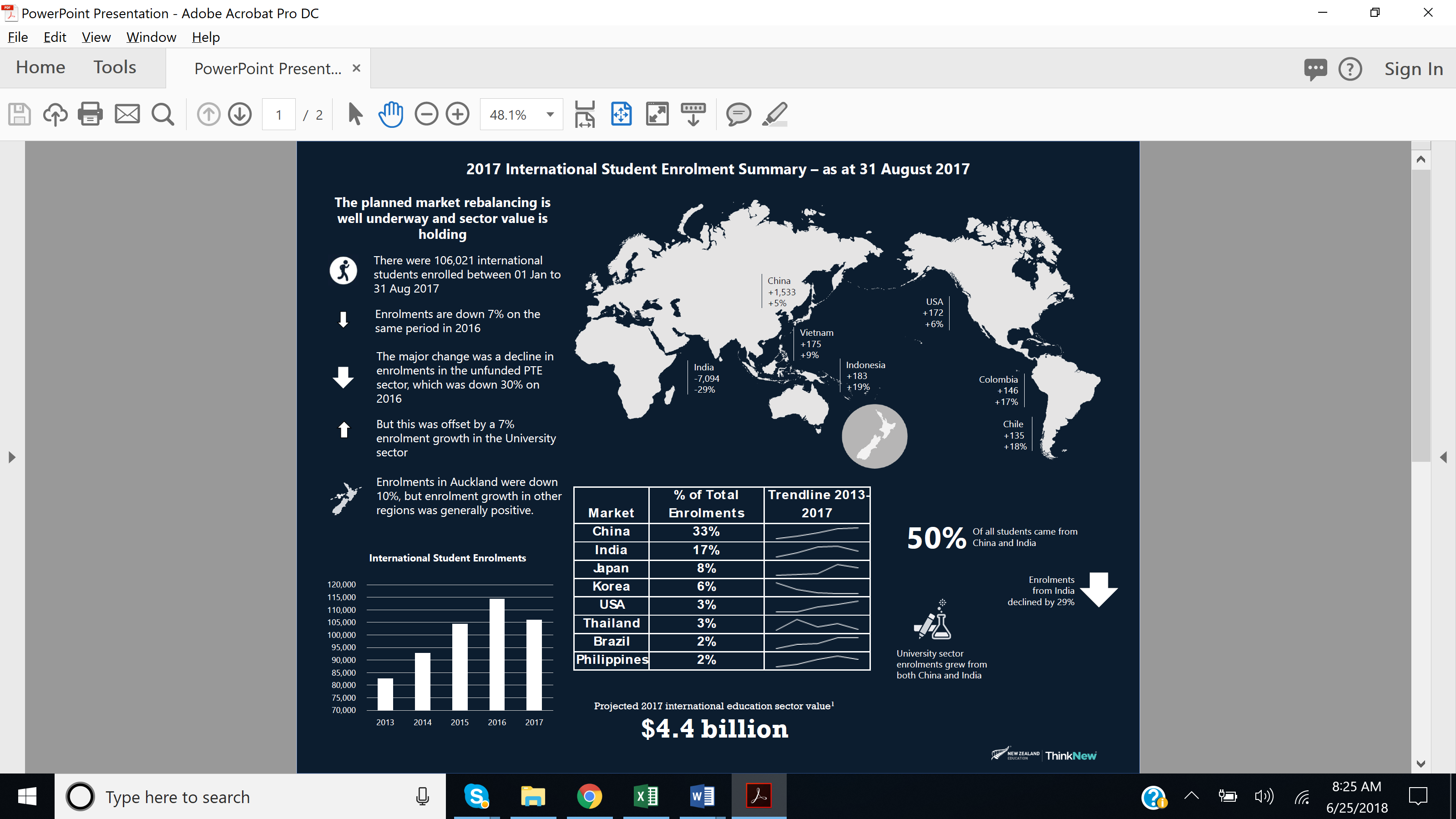


Looking at percentages, universities make up 27.9% of the value while PTE is in close second with 27.2%.



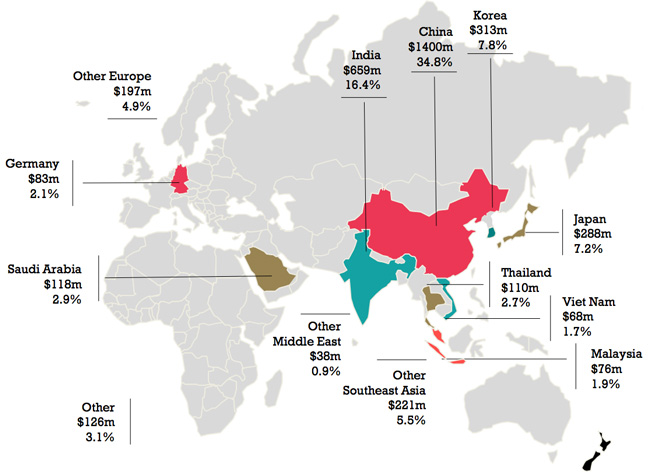
http://monitor.icef.com/2017/02/new-zealand-economic-impact-of-international-education-up-50-since-2014/

In August 2017, the international enrolment figures were released for New Zealand. It is notable that the enrolment is heavily dependent on China and India accounting for over 50% of enrolment. Also, India’s enrolments have decreased significantly. Early indicators for 2018 show a stable visa disbursement for Indians. It is also notable that Brazil is 2% of enrolment in New Zealand.



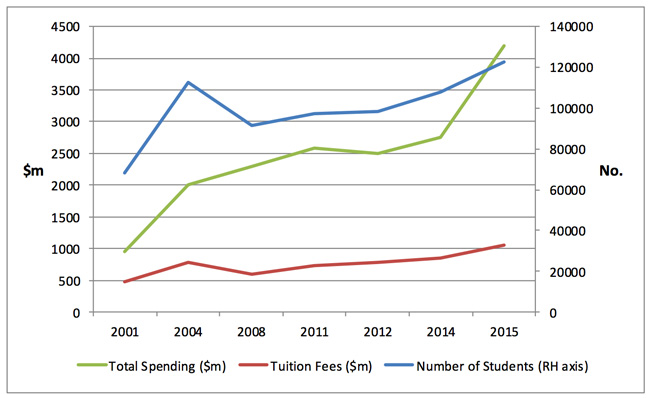
***Source Markets for Revenue***

In the graph below, each market indicates the total value to New Zealand as well as percentage of overall value. China and India are above 50% of the value. Please note that the other category includes Brazil and Columbia.



Proportion of onshore international education spending by sending market, 2015/16. Source: Education New Zealand

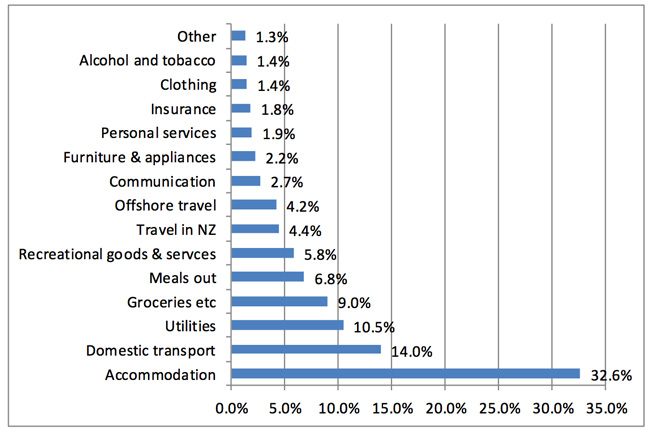
***Spending Analysis***



Foreign enrolment, international student tuition, and total foreign student spending, 2001-2015. Source: Education New Zealand

As noted above, student numbers are growing at a good clip from 2013 on. Tuition fees grow at a corresponding rate, albeit at a bit slower of a rate. However, if you look at total sector spending, you’ll note the step curve. There are several explanations including price inflation particularly for accommodation costs, more students staying for the entire year, and students extending their stay to work or pursue additional study.

***Other spending contributing factors***



Foreign student non-tuition expenditures by category, 2015/16. Source: Education New Zealand

In the graph above accommodation contributes to about a third of all non-tuition spending. Accommodation and transport account for about half of all spending.

New Zealand hired Deloitte to conduct a study on the economic impact of student and academic mobility. Below is an excerpt from the report detailing their findings of how student mobility affects the economy:

“Increased student flows contribute to GDP both during their studies (through increased net expenditure) and post-studies (through increasing labor force capacity and productivity in New Zealand). Modelling by Deloitte Access Economics shows:

* A $1.00 investment in a reciprocal long-term exchange program with an ‘average’ country would lead to an estimated economic return, as measured through increases to GDP in NPV terms, of $1.06 after fifteen years.
  + The benefits attributed to private individuals in the form of higher post-tax wages and an increased likelihood of being employed would be $0.43. The split between the public benefit to the broader economy and private individuals has been informed by a literature review.
  + The remaining $0.63 represents public benefits attributable to increased workforce capacity and benefits to other businesses as international students and their Visiting Friends and Relatives (VFRs) demand a range of goods and services during their studies.
* The benefits from international student flows are highly dependent on the composition of students who are encouraged to participate. For instance, if there were three inbound international students for each outbound New Zealand student, the benefits would increase to $6.61 after fifteen years.
* A $1.00 investment in a reciprocal short-term exchange program with an ‘average’ country would lead to an estimated economic return, as measured through increases to GDP in NPV terms, of $0.87 after 15 years. The key driver for a lower benefit from short-term exchange programmes compared to long-term exchange programmes is that for long-term exchange programmes the assumed net increase in tertiary educated persons (the difference between the number of inbound international students staying in New Zealand relative to the number in outbound students remaining overseas post study) is greater.”

***Tourism***

So far, we’ve discussed direct revenue and value from international education. In this section we’ll address some of the indirect revenue from international education. One of the items is tourism. This includes both international students travelling as well as families and friends visiting.

New Zealand has limited information on tourism activities. A survey of 217 university students in 2009 found:

“…many travelled frequently (Payne, 2010). Just over 13% of the students had taken between 5-7 overnight trips during the previous 12 months; nearly half (47%) the students had taken between two and four overnight trips; and just over a quarter (26%) had taken one overnight trip.”

While New Zealand hasn’t calculated the spend by families and friends visiting, France has. Half of survey students indicated they had friends and families visit them while studying. The economic benefit is estimated at €1.7 billion per year. A 2011 report created by the French senate indicated that the money spent by visiting relatives created over 10,000 jobs in tourism.

***Trade***

International students appear to keep ties with their host countries after they return home. A recent survey of international students and alumni of London universities found that 60% were interested in doing business with the UK as a direct result of their having studied in London. (London First & PWC, 2015).

“Immigration boosts trade, with a meta-analysis showing that an increase of 10% in the number of immigrants increases the volume of trade by about 1.5% (Genç, et al., 2012)”

**Soft Power**.

Soft power is a term defined by Harvard professor Joseph Nye that refers to a non-coercive power that is based on a country’s culture, political values, and foreign policies (Nye, 1990) For many countries, international education is a way to exert soft power both through hosting international students as well as setting up branch campuses abroad. In addition, students studying abroad can be thought of as ambassadors for their country. One of the most notable examples of this is the Fulbright scholarship offered by the US Department of State. This scholarship enables US students and professionals to study abroad as well as foreign students and professionals to study in the US.

By locating in a country, an institution can become a useful instrument of that country to portray different values and cultures it wishes. New York University, an institution with a highly reputable global brand, chose to set up a branch campus in Abu Dhabi. By doing so NYU has sent a message about Abu Dhabi whether it meant to or not. NYU could have chosen many other destinations but chose Abu Dhabi to set up and prosper.

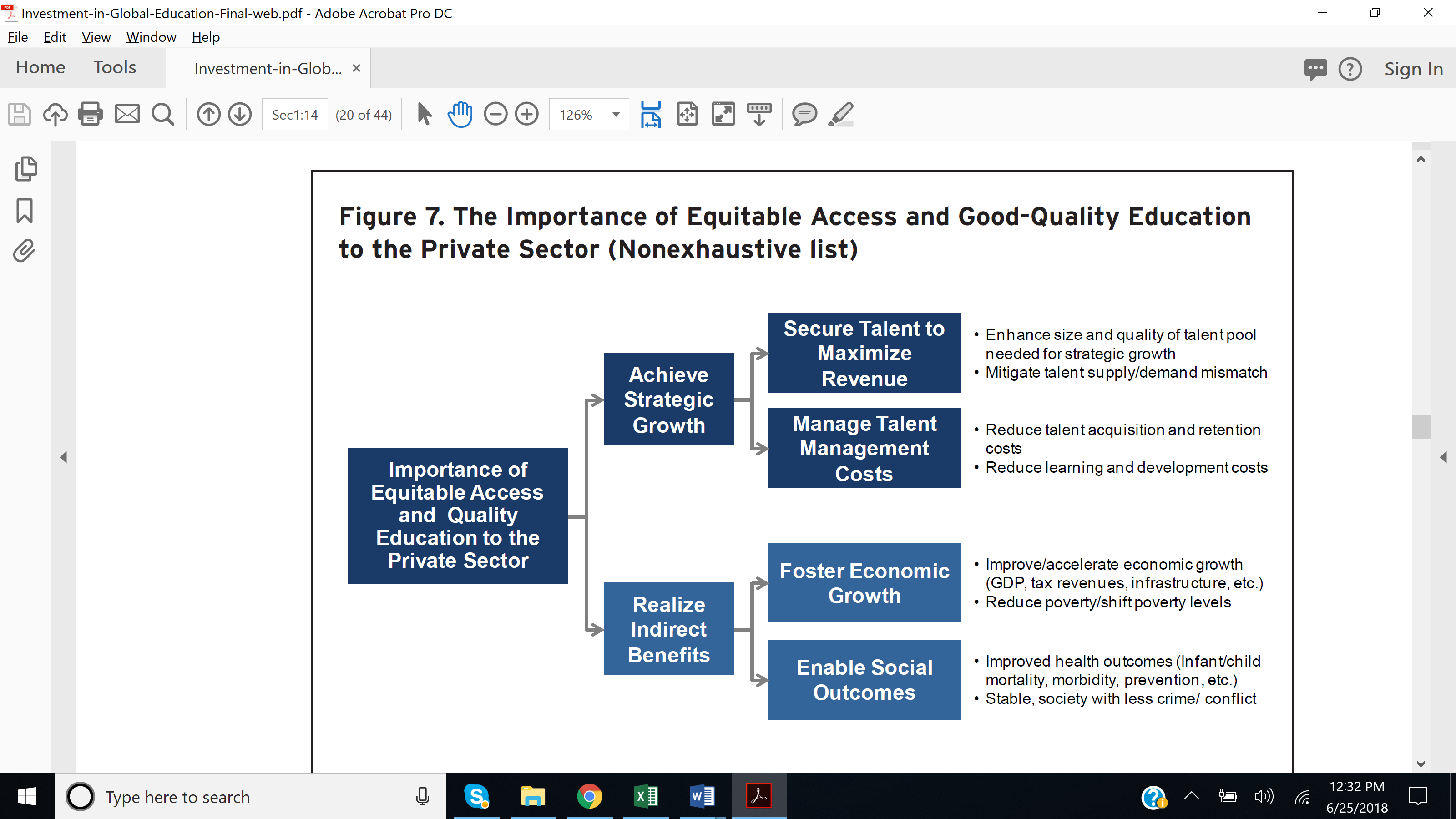
In 2006, about 90% of New Zealand’s tertiary students, ITP, and PTE report satisfaction and a positive experience with their institution. New Zealand remains within global benchmarks that students would recommend their institution to a person thinking of studying there (89% of university graduates, 79% of institutes of technology and polytechnics). 73% of foreign graduates reported feeling connected or very connected to New Zealand (Illuminate Consulting Group, 2009).

“In 2010, Butcher identifies notable Asian alumni who have studied at New Zealand universities in the past and then held influential positions internationally. He goes on to say that many formed relationships with their universities, communities and churches in New Zealand. Research to date has mostly identified the potential for international education to have a positive impact on relationships with other countries, without directly quantifying this impact.”

**Business, Innovation, Workforce**

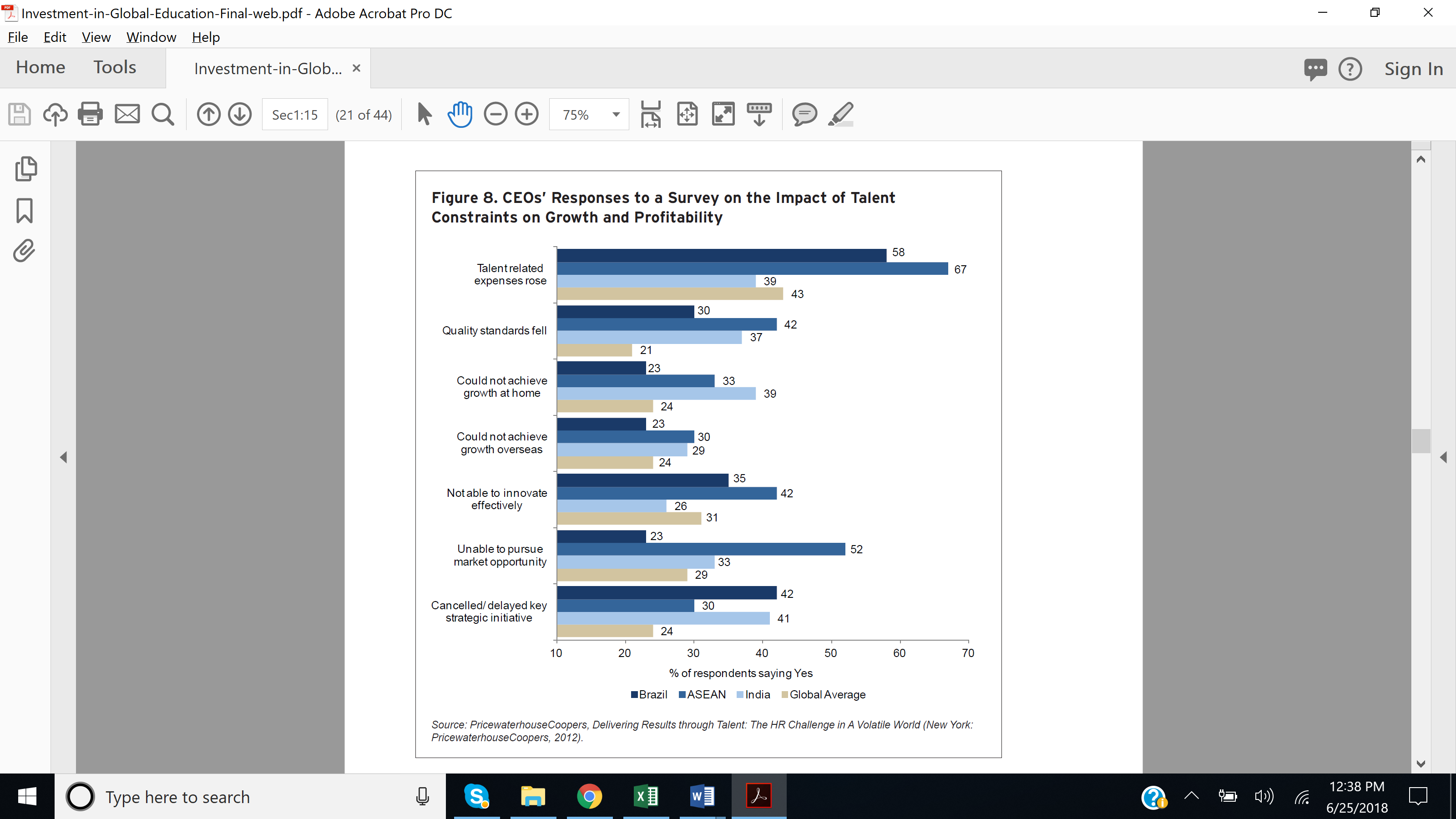
Hardly a month goes by without some sort of reference in the news to “global talent shortage”. It’s no secret that economies thrive on skilled and available workers. Without them, industry is capped and can’t be expected to grow (although innovations in AI will increase productivity). Therefore, international education investments have got to provide ready talented individuals to help fuel industry. It is predicted that by 2070, the majority of workers will come from the developing world.

Businesses will have a major stake in education. See graph below:



Investment in Global Education, Brookings, Accenture, and Global Business Coalition for Education, September 2013.

The shortages of skilled workers are affecting emerging economies like those in Latin America. These shortages are predicted to grow. Below are the results of a survey to CEOs around the world.



It is clear that by setting up education in Uruguay, Uruguay Global will be providing trained students to the workforce sectors both in Uruguay and in home countries. However, the effects will go beyond just providing a skilled workforce. Here are some of the other notable spillover effects that institutions have accounted for:

* Number of new business ventures created (see Cornell Tech case study)
* Number of people employed by the start-ups created
* Number of companies moved into the region because of available talent (including faculty)
* Number of patents filed
* Number of women participating in technology
* Increase in technology firms
* Faculty able to be recruited from top name schools
* Percent of employed graduates 6 months after graduation
* Average starting salary

**Cultural Awareness and Inter-cultural Skills**

In many of the work environments today, it pays to be able to transition between cultures and communicate effectively. These intercultural competencies can be learned through interaction with other students. Many international branch campuses encourage such interaction through local conferences, competitions, and events as well as interacting with local students in the classroom. As noted in the CMU-Qatar case study, CMU -Q works with high school students to help prepare them for the next step of university.

There are several surveys that indicate that intercultural competencies are valuable for employment. In a 2015 UK survey, 87% of students said that studying with someone from another country would give them a better worldview and 75% believed they would be able to develop a global network. (HEPI and Kaplan, 2015b). Note that development of these skills does not have to happen overseas but can happen at home through carefully planned activities and interactions. As one international education professional said, “Proximity doesn’t always translate into learning”.

While I’ve focused on students above, there is also a benefit to faculty working with faculty on research and co-teaching. There are many international education initiatives that will sponsor joint research and host professional development for local teachers.

**Resources Used:**

<https://enz.govt.nz/news-and-research/media-releases/international-education-report-highlights-broad-value-for-new-zealand/>

<http://monitor.icef.com/2017/02/new-zealand-economic-impact-of-international-education-up-50-since-2014/>

<https://enz.govt.nz/assets/Uploads/The-Economic-Impact-of-International-Education-in-New-Zealand-2015-2016.pdf>

<https://www.universitiesnz.ac.nz/sites/default/files/Deloitte%20Access%20Economics_UNZ_International_collaboration_FINAL_report.pdf>

<http://www.obhe.ac.uk/who_we_are/Brochures/reportsoverview>

<https://newsroom.mastercard.com/press-releases/singapore-uk-new-zealand-and-uae-among-worlds-stand-out-digital-economies/>

<https://www.gla.ac.uk/media/media_502856_en.pdf>

<https://intellilab.enz.govt.nz/document/414-beyond-the-economic-how-international-education-delivers-broad-value-for-new-zealand-pdf?_ga=2.133661454.1640469725.1529922704-909600614.1529439278>

https://www.universitiesnz.ac.nz/sites/default/files/Deloitte%20Access%20Economics\_UNZ\_International\_collaboration\_FINAL\_report.pdf

**Impact Evaluation**

Impact evaluation has many names, but generally comes down to understanding the difference between outcomes in having a program and without having a program. Therefore, the goal impact evaluation is to understand the impact that the program (and only the program) has on the outcomes. We need two populations – one who participates and one who doesn’t participate in the program as we are unable to track a single person through both options. Implicitly this means comprehending what would have happened without the program. We use a control/comparison group (“counterfactual”) to measure this situation. The best way to create a counterfactual is through a randomized controlled trial (RCT).

**Why do an impact evaluation?**

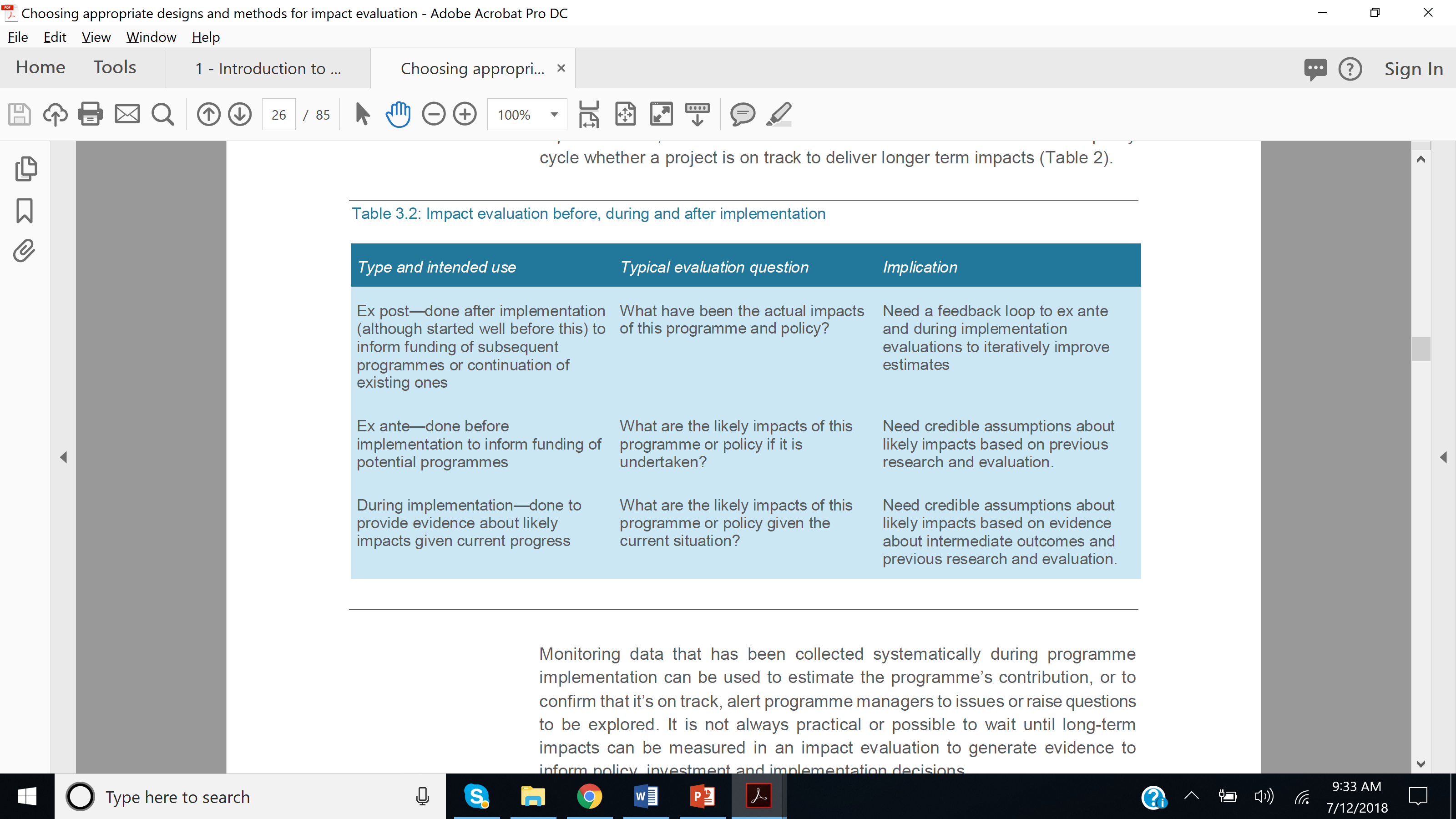
There are several reasons to conduct an evaluation. The first is to figure out if what you are doing is successful and if not, where it is breaking down. This can then inform decisions like continuation of funding, scaling, and replication. You may even replicate the evaluation in a completely different context. The second reason to do an impact evaluation is to provide evidence to funders and donors that their money is being used wisely and to encourage further funding. Finally, impact evaluation can inform communities about how their communities are being positively affected.

**Questions an impact evaluation answers:**

There are a number of questions that impact evaluations answer. The ones that Uruguay Global should focus on include:

* Did the program produce the intended outcomes in the short, medium, and long term?
* Did the impacts reach all intended beneficiaries?
* What were the unintended impacts?
* What were the features of the program that really contributed to the impact?
* To what extent did the impacts match the needs of the beneficiaries?

**When to do the impact evaluation:**



Source: Australian Government, Department of Industry, Innovation, and Science, “Choosing appropriate designs and methods for impact evaluation”, 2015 [www.industry.gov.au/OCE](http://www.industry.gov.au/OCE)

For Uruguay Global, it makes sense to do an evaluation during the program as the decision to implement the program is almost made. Impact evaluation will be an ongoing event for Uruguay Global. A sample schedule could be:

* Year 1 – Nimble rct/outcomes assessment
* Year 2 - Nimble rct/ outcomes assessment
* Year 3 – Impact assessment
* Year 5 – Impact assessment
* Year 10 – Impact assessment

Of course, what you are able to extract from the data will be different in Year 10 than in Year 3.

**Designing an impact assessment**

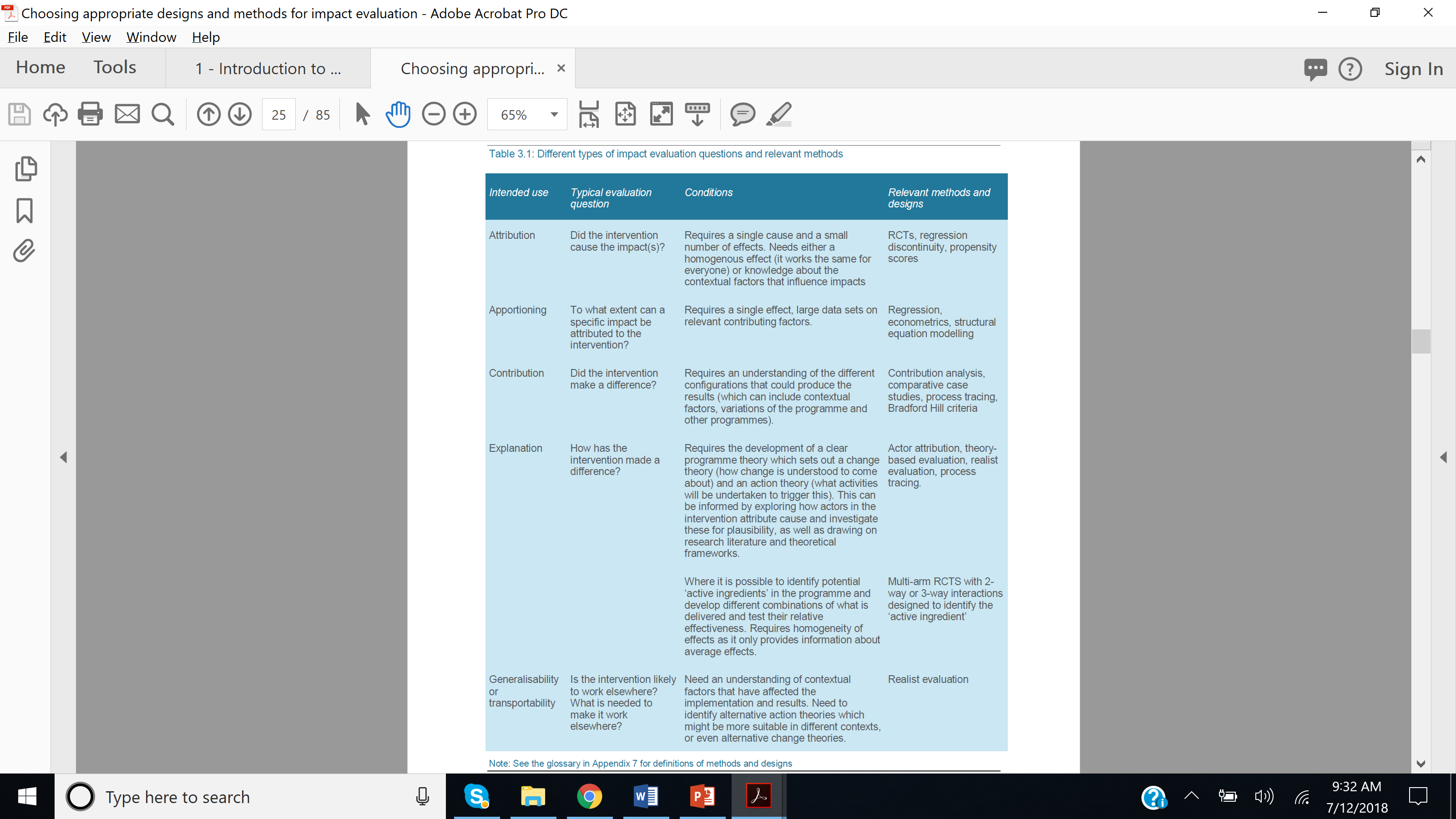
Before we delve into setting up impact evaluation, there are a few upfront things to take care of:

* Have clear objectives of the program
* Have a clear idea of how you will achieve the objectives

**Steps in conducting an impact assessment:**

The comprehensive process to conduct impact evaluation includes:

* Develop a theory of change (ToC) model. This model helps to identify intermediate outcomes that are pre-cursors to long term impacts, if the program was a failure, implementation failure, versus outcome effects, and what variables make the program work.
* Collect data about how well the program was implemented
* Explain to what extent the outcomes were produced by the program. Methods to do this include case studies.
* Look at the counterfactual through methodologies of difference-in-difference, logically constructed counterfactual, matched comparisons, multiple baselines, propensity scores, randomized controlled trial (RCT), and statistically- created counterfactual.
* Eliminate possible other explanations through general elimination theory, multiple lines and levels of evidence, and contribution analysis.
* Synthesize evidence
* Create reports



Source: Australian Government, Department of Industry, Innovation, and Science, “Choosing appropriate designs and methods for impact evaluation”, 2015 [www.industry.gov.au/OCE](http://www.industry.gov.au/OCE)

Throughout the case studies it was clear that institutions and governments have not invested in impact assessment. Most of them have some indicators of success including things like # start ups created, # employed after graduation, % graduated, etc. Governments in the Middle East have invested heavily in international education initiatives and also just have rudimentary indicators. A few institutions are starting to expand beyond just the usual indicators. For example:

* # jobs created by start-ups from our graduates
* Tax contribution to city from the new university
* Number of tech companies moving into the city because there is available talent
* # of women participating in tech careers

Below is an example of an outcomes assessment from an institution at the high level:

Quantitative Performance Indicators

- Students and Operations (data/statistics)

- Graduates (numbers, areas of employment, types of positions)

- Impact (startups, employment, attraction of new academic and commercial activities)

Qualitative Performance Indicators

- Private & Public-Sector Partnerships

- Academic and Research Partnerships

- Capacity-Building Initiatives

- Role in Attracting Organizations to the country

- Feedback from Key Stakeholders

- Graduates in High-Impact Positions

- Media Coverage

One of my interviews talked about how impact evaluation could be negative. First impact evaluations can drain time and resources really quickly. The interviewee stated, “If I have a choice between doing and measure, I’d rather do.” In addition, the outcomes of impact evaluation can be misleading. To understand impact, you need to pick proxies to measure. Often these proxies start to become the end goal and can cause institutions to shift in an unintended and unwelcomed way.

The summer 2018 edition of the Stanford Social Innovation Review (SSIR) featured “Ten Reason Not to Measure Impact and What to do Instead”. The article contends that while there can be high quality impact evaluations there is also a great deal of resources wasted on poorly conceived, designed, and implemented evaluations. It is difficult to get the “right-fit” for evaluations. Some of the reasons stated in the article include:

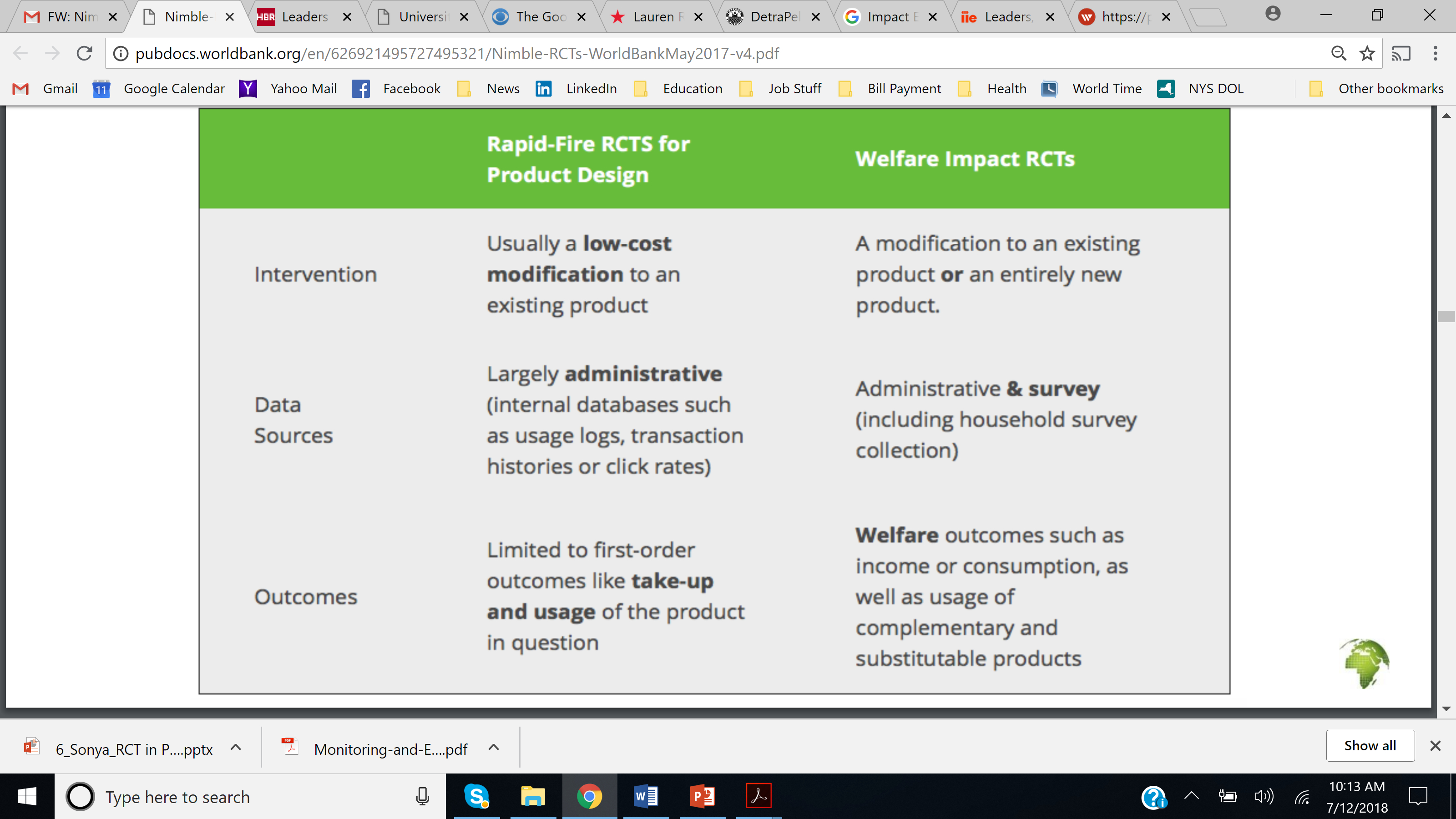
* **Good questions, but aren’t actually impact questions.** For example “Are we targeting the population we thought”, “how can we improve efficiencies?”
* **Too early impact assessment**. In order for impact assessment to work there needs to be a clear articulation of the theory of change what goes into creating the program and what is the expected result) as well as a strong implementation. It is difficult to measure impact if the implementation is week.
* **Program is chaotic**. If a program is constantly changing it can compromise the quality of the impact assessment.
* **Not Worth it**. There are cases where you already know the answer from another case study. Also, an impact evaluation should be able to tell you whey something works.

**One more consideration:**

The World Bank recently held a training on Nimble RCTs. These are A/B tests that look at short-term often operational questions. They are faster than traditional RCTs and much cheaper. They measure things like:

* Product take up
* Enrollment
* Attendance

The difference between a nimble RCT and a traditional RCT:



While helpful, nimble RCTs do result in limited outcomes knowledge and effect. Traditional RCTs are much more robust and comprehensive, but require more resources including time and money.

Resources:

“Introduction to Impact Evaluation”, Patricia J. Rogers, RMIT University and BetterEvaluation, March 2012

<https://ies.ed.gov/ncee/projects/evaluation/other_racetotop.asp>

<https://ies.ed.gov/ncee/projects/pdf/EvaluationPlanTemplate.pdf>

Australian Government, Department of Industry, Innovation, and Science, “Choosing appropriate designs and methods for impact evaluation”, 2015 [www.industry.gov.au/OCE](http://www.industry.gov.au/OCE)

<http://pubdocs.worldbank.org/en/626921495727495321/Nimble-RCTs-WorldBankMay2017-v4.pdf>

**Recommendations**

Common reasons that international education initiatives don’t work out include: enrollment issues, changes in operational conditions, and regulatory change. Unstated reasons that initiatives fail include: lack of due diligence, “bureaucracy vs. start-up” culture, and flawed governance. Here are some recommendations to manage the risk and aid the success of Uruguay Global:

1. **Understand demand**. Enrollment is absolutely critical to Uruguay Global. Understanding demand should be at the core of the development of the model. There are two types of demand that need to be understood. One is student demand and the other is industry demand. For student demand, the goal is to understand:

* Subject interests
* Degree certificate interests
* Is this adding a skill or upskilling
* Preference on format
* Decision-making criteria
* Next best alternative
* Willingness to pay
* Desired outcomes
* Desired career goals

On the other hand, employer demand is also important to comprehend. This means evaluating employers’ readiness to hire, what the job descriptions entail or what traits employers are looking for, what a potential salary might be, and how many professionals are needed. A few of the case studies spoke to the need to make sure that employer demand is present and proven and that getting ahead of demand can be detrimental for a program. In addition, CMU-Q spoke to the mismatch of cost of education versus salary in career when a student graduated.

As stated in the Cornell Tech and Northeastern case studies, it is critical to make sure both demand curves exist at the same time. In addition, creating realistic projections for the model is important. In the CMU- Africa case study we could see that the enrollment projects fueled the investment projections. When the enrollment projections fell short, the government had to step in and increase investment.

1. **Entice international students to stay**. Many countries including Canada, Hong Kong, Singapore, and Australia provide incentives for students to stay. The Deloitte Report on Universities New Zealand - assessing returns on international collaboration in December 2017 calculates the benefits to the country as follows:

“A $1.00 investment in a reciprocal long-term exchange programme with an ‘average’ country would lead to an estimated economic return, as measured through increases to GDP in NPV terms, of $1.06 after 15 years. This benefit is made up of:

* $0.20, which is the benefit from student expenditure during their studies on living expenses.
* $0.86, which is the benefit from students entering the workforce post-studies, and increasing the education attainment in New Zealand.”

There are several ways governments encourage students to stay. In Singapore, universities offer significant tuition discounts if a student will stay 3 years after graduation (this is called a bond or work commitment). This works because Singapore actively manages immigration and holds institutions accountable. Another model is the Canadian model which offers an easy application to stay and work in Canada for 3 years following graduation. They also offer the ability to apply for PR status. Finally, governments have also enticed international students to stay through access to plenty of start up funding.

Other countries policies follow same type of patterns listed below:

* 1. The US has a 1 year OPT model.
  2. Australia: Students can apply for a temporary graduate visa which allows students and their families to stay and seek employment
  3. Germany, France, UK, Switzerland. Germany offers a job seeker visa that allows recent graduates to find employment. An individual can start with an internship and switch it to an employment visa. The job seeker visa is for highly qualified candidates.
  4. Hong Kong. Students can apply for Immigration Arrangement for Non-Local Graduate status. This allows you to look for a job for 1 year. The student can work for any employer in Hong Kong without the need for addition visa.

1. **Clear definition of outcomes**. It is critical to understand the outcome expectations from all parties involved. While this is not always possible as interests may evolve over time, spending the time up front to uncover all the outcomes will potentially save time late. In the CMU -Qatar case study we see that CMU - Q started by offering a degree in computer science. However, what Qatar really wanted and needed was a degree in information technology. CMU-Q later added the program, but costs were involved. In the Yale-NUS case study, the changing Ministers of Education meant changing outcomes for spillover effects.
2. **Build relationships across the spectrum**. While the current government may support the initiative, building relationships across the spectrum of actors can ensure long -lasting tenure of the initiative. There is always room to involve different parties, groups, etc and have them play a role in the success. Cornell Tech views one of their big achievements that they were able to a Republic and Democrat mayor on stage at the same time both enthusing about Cornell Tech and viewing it as a success. It could have been that the incoming mayor viewed Cornell Tech as the former mayor’s idea and venture and wouldn’t want to engage. Cornell Tech worked really hard to avoid that situation.
3. **Build flexibility into the model**. A number of the case studies stated and demonstrated that there is a real need to build flexibility into the model. Some institutions called it “pivoting”, some called it “agile”, but the idea is the same. Implementations of international initiatives never go exactly as planned and you’ll need the ability to change what doesn’t work. To do this, you need to appoint decision-makers and understand the constraints whether it be financial, resources, scope, etc. In the CMU-Q case study we discussed changing the strategy for hiring faculty. In the Northeastern model we see changing from a master’s degree to certificate and short-term programming.
4. **Clear identity**. It is important to understand the identity of what you are trying to create. The case study that made this the clearest was CMU (both Qatar and Africa). They were very clear that they were Carnegie Mellon University in a country. This dictated how they operated and what was negotiable. Faculty hired at branch campuses travel to CMU Pittsburg to learn about CMU methodology, culture, and rigor. This also helps define the roles with partners. For CMU – Qatar, the Qatar Foundation was responsible for defining outcomes, introducing partners, and provide support for the community. CMU’s role on the other hand was to provide CMU academic rigor and experiences as well as create an ecosystem of innovation. In the Yale-NUS College example, identity took awhile to develop. There was confusion in the beginning if the campus was really just “Yale in Singapore” or was meant to be a true Liberal Arts institution in Singapore (like a Williams or a Swarthmore).
5. **Partner with an innovative brand**. Creating a brand presence in a new market requires resources and time. In the case study from Northeastern, it was estimated it could take 5-7 years (at least for creating a brand in Silicon Valley). The example given was the amount of money Babson has spent on advertising and marketing in Silicon Valley and the questionable ability to recover cost. In the Yale-NUS case study, Singapore chose Yale in part because of its brand recognition. From the Cornell Tech case study, brand matters for recognition matters and driving enrollment, but it also really helps with recruitment of faculty

It is not enough just to partner with a brand name. Technology changes so quickly you need to make sure that the faculty are up to date and have experience. For Cornell Tech, they will not hire faculty who do not have relevant industry experience. To teach and guide students to start new companies and innovate faculty need to be comfortable beyond the classroom. It is these types of professors that Uruguay Global would like to have. They will not only influence students, but also industry, local universities, etc.

1. **Experiential Learning is key.** While students can learn technology and entrepreneurship, most programs these days have an experiential learning component. The Cornell Tech case study is a good example of this where students spend at least a 1/3 of their curriculum with experiential learning. Cornell Tech has seen great success in students taking products started during the experiential learning courses and launching them.
2. **Pay attention to engagement and community.**  Blended learning models can work very well for students. Some advice from our case studies include creating a way to ensure students are understanding and engaging with the material. In addition, it is important to create community. Chances are a number of these students will work together to create innovative companies. Fostering community leads to these outcomes. Starting off the program in person is a great way to jump start a community.
3. **Actively manage spillover effects**. To achieve the designated spillover effects, Uruguay Global will need to take specific actions to make it happen. For example, in order to have maximum effect on industry, industry should actively participate in the academics and the experiential learning. Perhaps companies could offer case studies and at distance internships. If the goal is to prepare the pipeline for the certificate, then students and faculty should spend time with the local universities helping to drive interest and quality of teaching.

On the other hand, CMU -Q is finding that once students develop skills they are being recruited by firms in the UK and France. One way to keep skilled talent local is to develop a fund that will invest in start-ups. Cornell Tech has a $100 million fund to invest in start-ups in order to help operationalize them and keep them in New York. Other ways to help maintain talent locally is to offer work visas. Canada is well known for this – they offer a 3-year work visa for students graduating from university.

Set up indicators early so that you can measure what types of effects Uruguay Global is creating.

1. **Focus on supporting women to pursue Uruguay Global.** Across the world, men dominate enrollment in STEM degrees. We have seen examples of institutions that have accomplished this including Olin College of Engineering (50%) women and Northeastern University in Silicon Valley. There is no 1 strategy that will work. Rather a number of strategies should be used:

* Encourage women faculty to spend time at local universities. Having examples of women success will matter in interest and pursuit of the degree.
* In the admissions process, have women students get in touch with women applicants and hold information sessions. You could even create an ambassador program.
* Have college women work with current students on projects.
* Offer a bridging program. Chances are there are women who study something different but have an interest in technology. Offer a program that will give them the background they need to participate in Uruguay Global.
* Offer scholarships for women students
* Try to partner with the WeTech program. This is a program by the US government that sends women entrepreneurs to the Silicon Valley for 6 weeks of mentoring and learning with women in Silicon Valley.
* Remember that the interview is half sales pitch. Use the interview to help support and encourage women through the process.
* Use women mentors that are successful entrepreneurs from project UR-M1045.

1. **Location is more important than infrastructure.** In the Northeastern and Cornell Tech case studies, it is clear that the location really mattered. In surveys on how students’ decision criteria, infrastructure usually is rated lower on the list of criteria. Other items like costs and faculty matter more. In the case study on Yale-NUS College, the first year of recruiting happened without a building, full faculty, list of majors, etc. It was the idea of liberal arts and the opportunity to be entrepreneurial that sold students. However, location in relation to industry can matters. With Northeastern they are physically co-located to leverage each other’s’ capabilities, knowledge, and information. With Cornell Tech there is an innovation hub that brings together industry, faculty, student start-ups to create a productive ecosystem.