



Global University Entrepreneurial Spirit Students' Survey

# GLOBAL UNIVERSITY ENTREPRENEURIAL SPIRIT STUDENTS' SURVEY 2008 SINGAPORE REPORT

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## Executive Summary

### *Background*

Global University Entrepreneurial Spirit Students' Survey (GUESSS) is a biennial international comparative research project that seeks to assess the entrepreneurial intentions and behaviour of students at tertiary institutions. The project aims to understand the profile, vocational goals, founding intentions, entrepreneurial activities of tertiary students, and the entrepreneurship climate in tertiary institutions. GUESSS was initiated in 2004 and coordinated by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen (KMU-HSG) in Switzerland.

The NUS Entrepreneurship Centre was invited to lead and coordinate the 2008 study for all tertiary institutions in Singapore. Singapore was represented in the 2006 pilot-scale study by the Singapore Management University. The GUESSS 2008 study was administered through a common web-based questionnaire from May to November 2008. Students of the participating tertiary institutions were provided a link to the national questionnaire via email. A total of 63,527 students from 83 tertiary institutions in 19 countries participated in the 2008 study. In Singapore, a total of 2,319 students from the 3 public universities and 5 polytechnics were successfully surveyed.<sup>1</sup>

While the overall summary findings on all 19 countries covered in the 2008 GUESSS study have been released in January 2010 on the official GUESSS website (<http://www.guesssurvey.org/>), this report presents the more detailed findings on Singapore in comparison with the other participating countries.

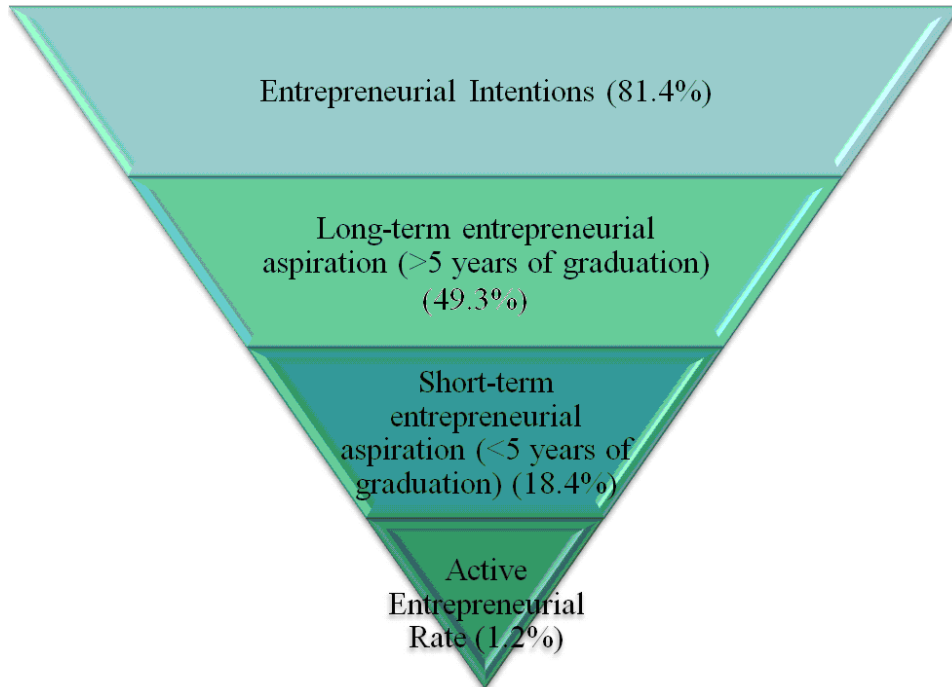
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<sup>1</sup> For NTU, only students from the Nanyang Technopreneurship Centre were surveyed, while for Singapore Polytechnic and Ngee Ann Polytechnic, only students from the Business School were surveyed.

**Key GUESSS 2008 Singapore Findings**

Singapore students have one of the highest entrepreneurial intentions rates worldwide. 81.4% of those surveyed in Singapore expressed some form of interest in entrepreneurial activities, significantly higher than the international average of 71.3%. 49.3% indicated long term aspirations to pursue entrepreneurship as a vocation, hoping to start their own businesses 5 years or more after graduation. This is higher than the international average of 42.8%. However, a lower proportion (18.4%) of Singapore students aspired to be entrepreneurs within a shorter time frame of less than 5 years upon graduation. Nonetheless, this figure is still higher than international average of 16%. The active entrepreneurial rate, which is the percentage of students who are currently active entrepreneurs, is 1.2% for Singapore, slightly below the international average of 1.8%. The different levels of entrepreneurship interest among tertiary students in Singapore are depicted in **Figure 1**.

**Figure 1: Levels of Entrepreneurship Interest among Tertiary Students in Singapore**



○ **Entrepreneurial Potential**

● *Vocational Aspiration*

The percentage of students who aspire to be entrepreneurs within 5 years after graduation ranges from 10.2% for Switzerland and Germany to 28% for Mexico. In Singapore, 18.4% of students aspired to be involved in ‘independent-related’ entrepreneurial activities in the near-term (less than 5 years) upon graduation. This percentage is slightly higher than the international average of 16%.

While 18.4% of Singapore students overall aspired to be entrepreneurs within 5 years of graduating, a slightly higher percentage of polytechnic students (20.8%) compared to their university counterparts (15.1%) planned to do so. However, in the longer term (i.e. 5 years or more after graduation), a significantly higher percentage of Singapore students (48.4%) desired independent entrepreneurial vocations. The proportion is higher for business students; around 1 in 2 aspires to be involved in independent businesses 5 years or more after completing their studies. Comparatively, a lower proportion (41.1%) of non-business students has this long-term aspiration.

● *Entrepreneurial Intentions*

Entrepreneurial intentions rate is an indicator of the general level of interest in entrepreneurship. It is measured as the proportion of students who indicated that they have at least given a thought to eventually starting their own businesses. Globally, entrepreneurial intentions range from 59.4% for Germany to 91% for Mexico. In Singapore, 81.4% of respondents expressed entrepreneurial intentions, significantly higher than the international average of 71.3%. The proportion is higher for diploma students/undergraduates compared to graduates/postgraduates (87.1% versus 71.9%).

● *Entrepreneurial Propensity Index*

The ‘entrepreneurial propensity’ index is computed based on two components: the students’ entrepreneurial intentions; and the steps taken to start a business. The maximum value of the index is 10; minimum is 1. The international average of the index is 3.3. Globally, business students display a higher entrepreneurial propensity (3.7) than their

non-business counterparts (3.2). The entrepreneurial propensity index ranges from 2.8 for Switzerland to 4.7 for Mexico and Estonia. Singapore's index stands at 3.7, slightly higher than the international average of 3.3, and the indices of advanced OECD countries including Germany, Belgium, and Finland.

○ **Actual Entrepreneurial Activities**

• *Active Entrepreneurial Rate*

The active entrepreneurial rate is measured as the percentage of students who are currently active entrepreneurs. The rate ranges from 0.4% for France to 3.7% for Estonia, with an "international" average of 1.9%. Singapore's active entrepreneurial rate is 1.2%, slightly lower than the "international" average rate.

• *Start-up Survival Rates*

Overall, the survival rate of businesses started by Singaporean students is 77.1%. A higher percentage of businesses founded by polytechnic students compared to university students (i.e. 89% versus 70%) were still in existence at the point of survey. However, the differences in survival rates between business and non-business students as well as undergraduates and graduates/post-graduates were small.

• *Satisfaction from Self-Employment*

The level of satisfaction from self-employment is slightly higher for Singapore entrepreneurs compared to the international sample. In particular, Singapore entrepreneurs indicated a slightly higher satisfaction on two dimensions; "With hindsight I am very happy that I founded my company" and "I would recommend anyone to found a company, if he or she feels capable of doing so." Among the Singaporean sample, business school students reported greater satisfaction from self-employment as compared to their non-business school counterparts, particularly in terms of their willingness to recommend others to found a company. Furthermore, undergraduates more so than graduates/post-graduates derive greater satisfaction from starting their own businesses



○ **How Entrepreneurial Intentions Vary Among Singapore Students**

Entrepreneurial intentions and aspirations are higher among male students than among female students. Male student entrepreneurs also expressed higher levels of satisfaction from self employment compared to female student entrepreneurs. Furthermore, a larger proportion of graduates/postgraduates have started their own business compared to undergraduates/diploma students. In terms of family influence on actual start-ups, a higher proportion of those who have started or intend to start their own business have entrepreneurial family background (i.e. father/mother/grandparent has always been self-employed and still is).

○ **Business Goals of Singapore Students**

Comparing business school students with non-business students, the former are interested in starting mainly services-related businesses (71.3% for business students versus 62.8% for non-business students), while the latter are inclined to start manufacturing-based businesses (16.9% for non-business students versus 5.1% for business students). Manufacturing-based businesses are also more popular among graduates (23.2% for graduates versus none for undergraduates) compared to undergraduates who prefer services-related businesses (91.7% for undergraduates versus 56.3% for graduates).

In terms of innovation, a higher proportion of non-business students (17.5%) compared to business students (9.0%) offers or intends to offer product/services that are totally new worldwide. Among actual entrepreneurs, majority have experience in different areas of their businesses e.g. industry, products, customer groups, and distribution channels. The priorities set forth for new businesses among actual and intending entrepreneurs are comparable across the different course of studies and type of IHLs.

○ **Intending Entrepreneurs (steps taken to start a business)**

A larger percentage of the intending entrepreneurs in Singapore compared to the international sample have taken various steps to start a business. More than half indicated that they have thought through initial business ideas, while about one-fifth have written down their initial business ideas and gathered start-up specific information. More

encouragingly, almost 1 in 5 intending entrepreneurs in Singapore has developed a business plan compared to fewer than 1 in 10 of the global sample of intending entrepreneurs.

○ **Entrepreneurship Climate in Tertiary Institutions**

● *Importance of Entrepreneurship Courses, Programmes, and Infrastructure*

On a scale of 1 (very unimportant) to 6 (very important), the importance placed on entrepreneurship courses, programmes and infrastructure ranges from 3.58 for Germany to 4.62 for South Africa. Singapore's rating is 4.34, higher than the international average of 3.97. The entrepreneurship courses, programmes and infrastructure include entrepreneurship seminars and lectures, exchange of experiences with founders, start-up business games, business plan project seminars, start-up financing through the university, incubators, start-up coaching, contact for general questions.

● *Awareness of Entrepreneurship Courses, Programmes, and Infrastructure*

The percentage of respondents who are aware of entrepreneurship courses, programmes and infrastructure ranges from 16% for Austria to 71% for Mexico. In Singapore, about 38% of the respondents were aware of these university support services, higher than the international average of 20%.

● *Participation in Entrepreneurship Courses, Programmes, and Infrastructure*

The percentage of participation in entrepreneurship courses, programmes, and infrastructure ranges from 12.9% for Switzerland to 34.9% for Mexico. The participation rate for Singapore is 27.1%, almost on par with the international average of 25.7%.

In Singapore, business school entrepreneurs placed greater importance on start-up coaching, entrepreneurship lectures, and business plans seminars than their non- business school counterparts. There is also higher awareness among business school entrepreneurs on these entrepreneurship support services. This group also reported greater participation and fulfillment of expectations.

○ **Implications and Recommendations**

- IHLs need to look into effectiveness of their entrepreneurship program designs and the overall academic environmental context. This may require a more systematic evaluation and benchmarking of entrepreneurship programs and how they fit within students' overall educational experience in IHLs.
- Factors external to the IHL may hinder students' entrepreneurial activities. These include family and societal pressure and expectations, scholarship schemes that limit entrepreneurial options of scholarship holders, and a business environment that lacks sufficient early-stage funding. Unless policy changes external to IHLs are made, the impact of IHL programs may be limited.
- IHL entrepreneurship educational programs may not lead to immediate entrepreneurial actions by students. Students may choose to act upon their entrepreneurial interest later in life, after acquiring necessary skills, financial reserves, experience and network contacts. This suggests the need to measure impact of IHL programs in terms of long-term mindset change.
- IHLs may need to find ways to encourage greater inter-discipline or inter-faculty interaction between business and non-business students, including formation of cross-disciplinary teams in entrepreneurship courses and projects. This mitigates the possible silo-effects of students focusing only on their respective areas of knowledge, and creates opportunities for new business ideas by combining the skills of technical and business-school students in a complementary manner.
- Due to relative youth of polytechnic students and their high propensity to start businesses within 5 years of graduating, entrepreneurial education for polytechnic students should have a stronger element of mentoring by experienced entrepreneurs.
- More interactions between entrepreneurial polytechnic and university students should be encouraged, to synergize the practical/hands-on skills of the former with the more conceptual thinking of the latter.

## 1. Introduction

### 1.1 Overview of GUESSSS 2008

The Global University Entrepreneurial Spirit Students' Survey (GUESSSS), formerly known as the International Survey on Collegiate Entrepreneurship (ISCE) was initiated in 2004 by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen. GUESSSS is a biennial cross-national assessment of the founding intentions, goals, activities, and success of students at Institutions of Higher Learning (IHLs).

The survey has expanded from 2 countries in 2004 to 19 countries in 2008 (**Table 1**). The summary on comparative findings on all 19 countries participating in GUESSSS 2008 is reported in the International Report of GUESSSS 2008 (Fueglistaller et al. 2009). For Singapore, this is the second year of participation in GUESSSS 2008. In 2006, Singapore Management University (SMU) represented Singapore in a pilot-scale study on 354 students. The National University of Singapore (NUS) Entrepreneurship Centre, a division of NUS Enterprise, has been invited to lead and coordinate the 2008 study for all tertiary institutions in Singapore with funding from NUS.

The major objectives of GUESSSS are:

1. The start-up process: To systematically document the founding intentions and activities of students on a long-term basis, and make a temporal and geographical comparison.
2. The university: To make temporal and geographical comparison of the entrepreneurship courses, programmes and infrastructure offered at IHLs.
3. The individual: To make temporal and geographical comparison of individual-based characteristics that impact the founding intentions and activities of students.

More information on GUESSSS can be found on the GUESSSS website at <http://www.guesssurvey.org/>

**Table 1: GUESSS Participating Countries 2004 – 2008**

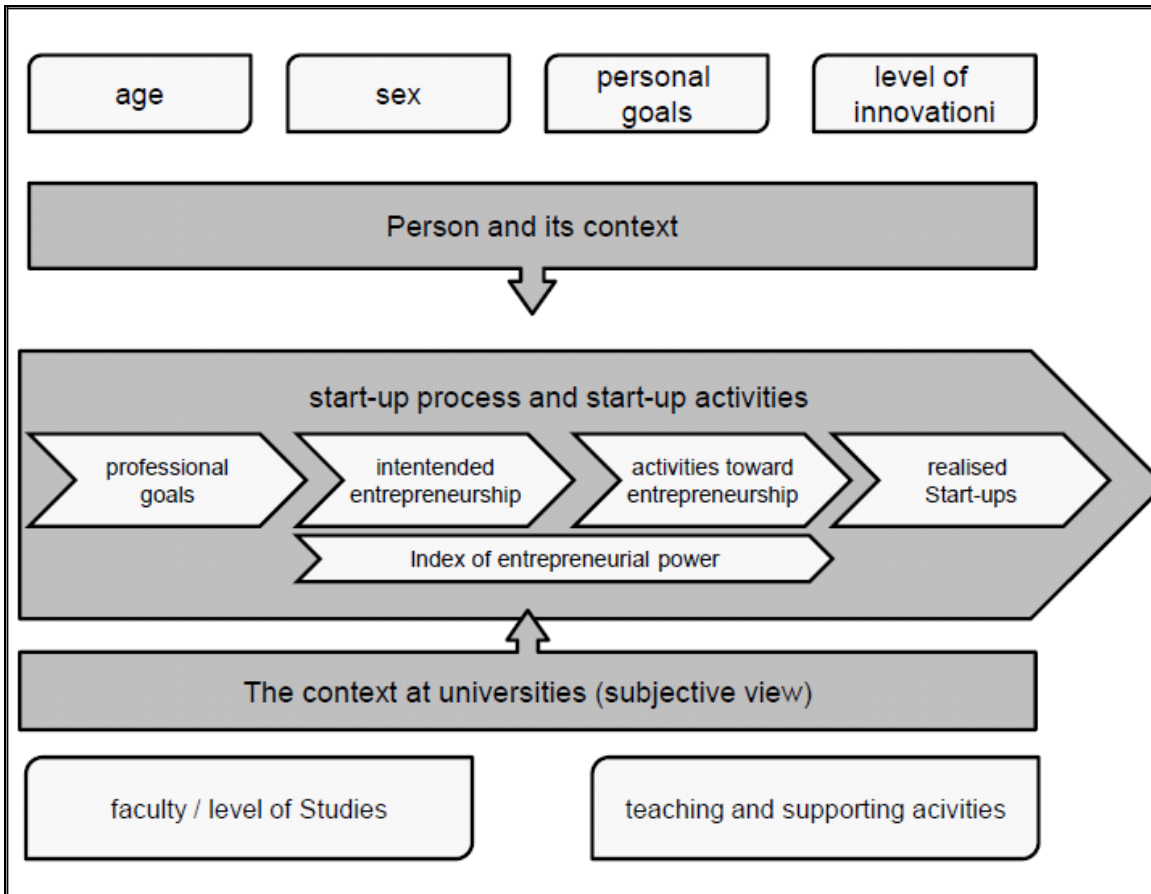
COUNTRY	Number of Interviewed Universities (2008)	Population (2008)	Number of Completed Questionnaires (2008)	Response Rate	GUESSS		
					2004	2006	2008
Australia	1	300	89	29.7	-	x	x
Austria	18	127,832	5,818	4.6	-	x	x
Belgium	13	101,294	9,833	9.7	-	x	x
Estonia	5	44,608	1,548	3.5	-	-	x
Finland	10	11,448	1,122	9.8	-	x	x
France	22	7,000	1,150	16.4	-	x	x
Germany	30	270,000	7,626	2.8	x	x	x
Greece	5	1,500	284	18.9	-	-	x
Hungary	24	307,621	11,366	3.7	-	x	x
Indonesia	4	4,053	583	14.3	-	-	x
Ireland	4	1,639	140	8.5	-	x	x
Liechtenstein	1	600	278	46.3	-	x	x
Luxembourg	2	4,674	424	9.1	-	-	x
Mexico	1	18,600	720	3.9	-	-	x
New Zealand	3	26,000	5,332	20.5	-	x	x
Norway	-	-	-	-	-	x	-
Portugal	1	8,900	60	0.7	-	-	x
Singapore	8	86,079	2,319	2.7	-	x	x
South Africa	8	211,802	2,150	1.0	-	x	x
Switzerland	23	69,289	12,685	18.3	x	x	x
<b>International</b>	<b>83</b>	<b>1,303,239</b>	<b>63,527</b>	<b>4.9</b>	<b>2</b>	<b>14</b>	<b>19</b>

This report presents the comparative findings of tertiary students' entrepreneurial intentions, activities, and behavior across 12 participating countries in GUESSS 2008. While there were 19 countries that participated in GUESSS 2008 (**Table 1**), only data from 12 countries were used in the analysis due to the small sample sizes for 7 countries. However, it is important to note that the response rates for the 12 countries vary widely from 1.0% for South Africa to 20.5% for New Zealand and therefore country comparisons should be interpreted with caution. Similarly for Singapore, the number of actual entrepreneurs is relatively small and hence the findings reported should also be interpreted with that caveat in mind.

### 1.2 GUESSS Research Framework

The overall aim of GUESSS is to compare on an international level the entrepreneurial intentions and activities of students at tertiary institutions. In doing so, GUESSS examines the start-up process and start-up activities of university students, particularly their career aspirations, entrepreneurial intentions, activities undertaken to found a business, and actual entrepreneurial start-ups. The GUESSS framework (**Figure 2**) also recognises the influence of the individual and university on the start-up process. From the individual perspective, the focus is on factors such as the students' demographic characteristics and business goals, while the university's perspective centres on the effects of faculty of studies, entrepreneurial programmes and infrastructure.

**Figure 2: GUESSS 2008 Research Framework**



Source: GUESSS 2009 International Report (Fueglistaller et al. 2009).

An earlier study conducted by NEC in 2000 used a research framework with similar elements to the GUESSS framework to ascertain the attitudes of IHL students in Singapore towards technopreneurship. Students from all four polytechnics and both universities (Republic Polytechnic and Singapore Management University had not yet been established) participated in this study which was conducted for the then-named National Science and Technology Board (NSTB). While the NSTB Student Technopreneurship Survey 2000 used a different questionnaire design and different constructs from GUESSS, there are several indicators that are common to both studies. This allows us to compare the level of entrepreneurial intentions among IHL students at two different points in time, as described in **Section 8** of this report.

### **1.3 GUESSS Data Collection Method**

GUESSS is administered through a common web-based questionnaire. The survey instrument is standardised to all participating countries. Each participating country has one representative, who is responsible for contacting students in that country. The representative is tasked to email the link to the questionnaire to as many students as possible, encouraging them to participate in the survey. In some countries, lottery prize draws were used to incentivize students to participate in the survey. On completion of the survey, all data are processed by the core team in Switzerland and the individual country datasets were disseminated to the national representatives in each country. A total of 63,527 students from 83 IHLs in 19 countries participated in the 2008 study. In Singapore, 2,319 students from the 3 public universities (NUS, NTU, and SMU) and 5 polytechnics were successfully surveyed between May and November 2008. For NTU, only students from the Nanyang Technopreneurship Centre were surveyed while for Singapore Polytechnic and Nanyang Polytechnic, only students from the Business School were surveyed.

#### **1.4 Country Representatives**

The GUESSSS 2008 study for Singapore was conducted by the following team members at the NUS Entrepreneurship Centre, National University of Singapore:

Professor Wong Poh Kam (Director, NEC and Professor, NUS Business School)

Dr Lena Lee (Research Fellow)

Ms Yuen-Ping Ho (Senior Research Manager)

Please refer to **Annex A** for the list of country representatives for GUESSSS 2008.

#### **1.5 Data Structure – Respondent Profile in Global and Singapore Samples**

Data for the global comparison are drawn from 63,580 responses of 19 countries. **Figure 3** shows that the number of responses ranges from 60 for Portugal to 12,685 for Switzerland. Due to the small sample sizes in 7 countries including Portugal, Australia, Ireland, Liechtenstein, Greece, Luxembourg, and Indonesia, only responses from 12 countries were used in the analysis for this report.

The majority or over 75% of respondents in Singapore and in most GUESSSS participating countries were undergraduates, aged between 22 and 25 years. Apart from Estonia and Hungary where the majority of respondents were mainly females, respondents in all other countries were split evenly between males and females. Both internationally and in Singapore, a higher percentage of respondents were non business students. **Tables 2 and 3** provide a summary of the sample characteristics for the global data.



Figure 3: GUESSS 2008 Participating Countries and Responses

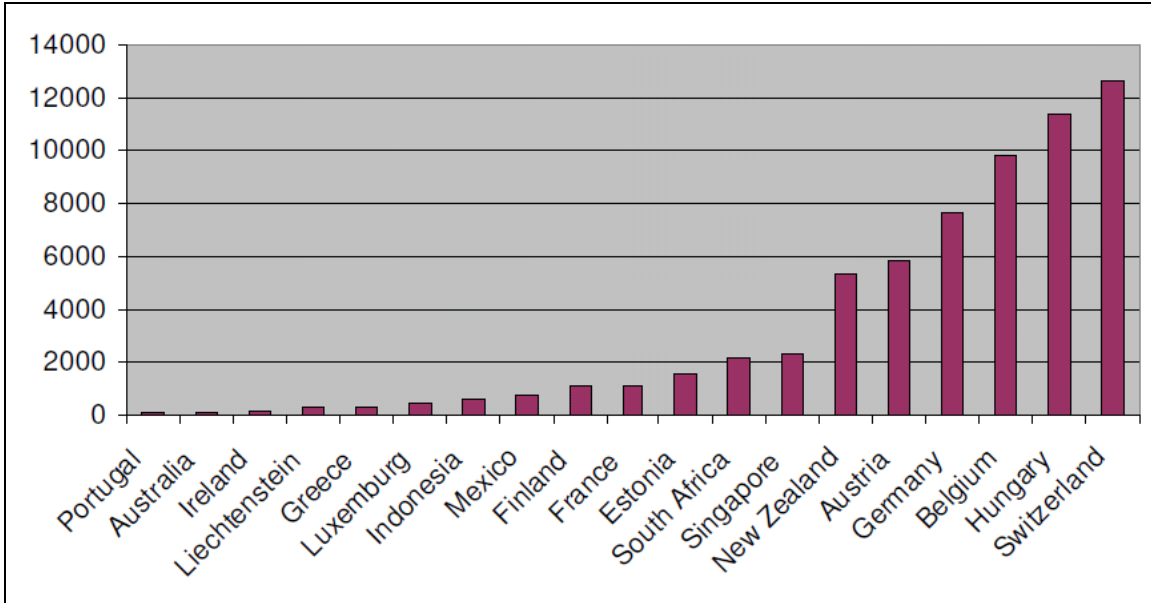


Table 2: Global Sample Characteristics – Level of Education, Age, Years of Studies

Country	Level			Average Age	Average years of studies
	Undergraduate	Graduate (Master)	Postgraduate (PhD)		
Austria	50.4%	43.7%	5.9%	25.10	3.42
Belgium	58.0%	35.6%	6.4%	21.34	4.16
Estonia	83.5%	15.6%	0.9%	22.83	14.09
Finland	74.9%	24.9%	0.3%	25.36	6.16
France	50.7%	48.5%	0.8%	21.47	4.68
Germany	50.3%	46.5%	3.1 %	24.78	3.14
Hungary	78.9%	19.2%	2.0%	23.40	11.16
Mexico	88.2%	11.3%	0.6%	22.20	12.23
New Zealand	79.6%	11.4%	9.0%	25.30	4.13
Singapore	80.4%	11.4%	8.2%	21.56	10.70
South Africa	86.0%	9.7%	4.3%	22.33	3.36
Switzerland	73.1 %	24.3%	2.6%	23.38	3.36
International	68.4%	27.4%	4.1 %	23.39	5.68

**Table 3: Global Sample Characteristics – Gender and Course of Study**

Country	Gender		Course of study	
	Male	Female	Business	Non-Business
<b>Austria</b>	47.3%	52.7%	43.0%	57.0%
<b>Belgium</b>	45.7%	54.3%	28.8%	71.2%
<b>Estonia</b>	21.5%	78.5%	26.9%	73.1%
<b>Finland</b>	48.3%	51.7%	48.2%	51.8%
<b>France</b>	54.2%	45.8%	62.8%	37.2%
<b>Germany</b>	47.2%	52.8%	34.0%	66.0%
<b>Hungary</b>	38.6%	61.4%	30.0%	70.0%
<b>Mexico</b>	54.3%	45.7%	37.4%	62.6%
<b>New Zealand</b>	41.7%	58.3%	30.8%	69.2%
<b>Singapore</b>	<b>49.3%</b>	<b>50.7%</b>	<b>44.0%</b>	<b>56.0%</b>
<b>South Africa</b>	52.8%	47.2%	46.9%	53.1%
<b>Switzerland</b>	55.6%	44.4%	36.5%	63.5%
<b>International</b>	<b>46.6%</b>	<b>53.4%</b>	<b>36.0%</b>	<b>64.0%</b>

In Singapore, the 3 public universities (NUS, SMU and NTU) and 5 polytechnics participated in GUESSS 2008 (**Figure 4**). The largest proportion of respondents were from NUS (24.7%), followed by Nanyang Poly (24.6%), and SMU (19.8%). Around 50% of respondents were diploma students, 30% were undergraduates, and a further 20% were graduates and postgraduates (**Figure 5**).

Figure 4: University/Polytechnic Attended by Singapore's Respondents

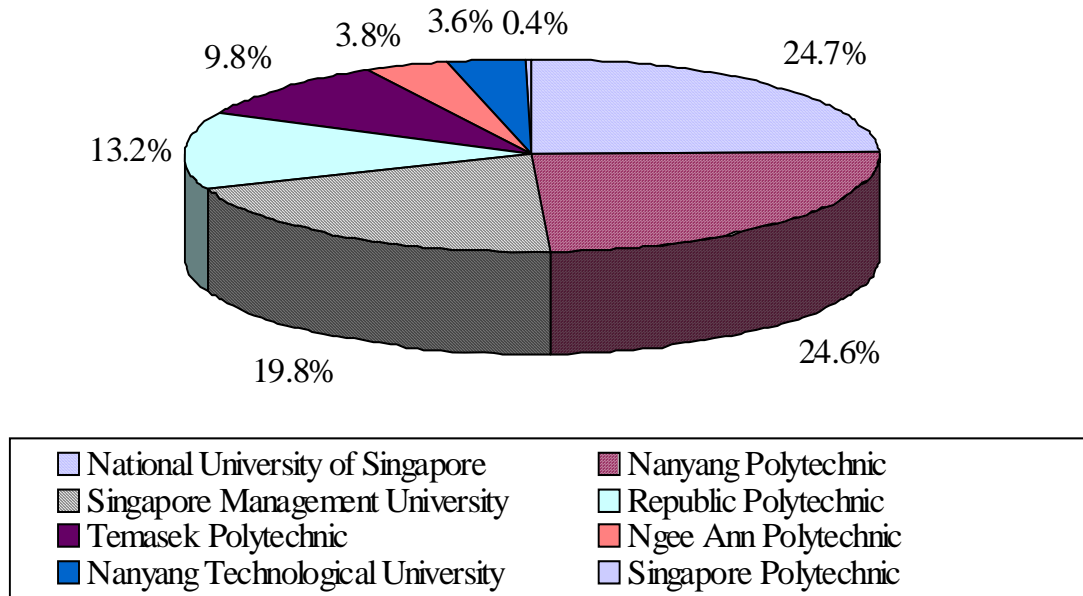
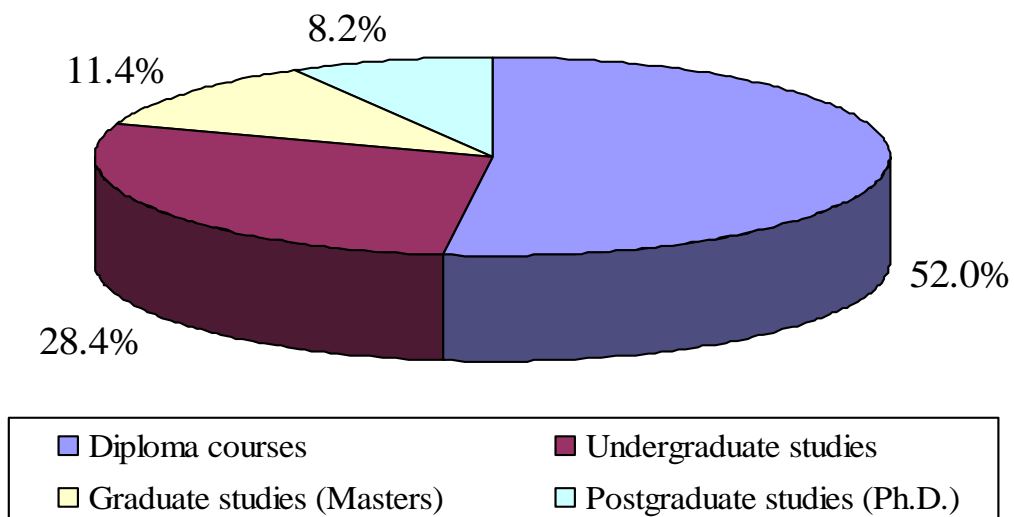


Figure 5: Education Level of Singapore's Respondents



## 2. Entrepreneurial Potential

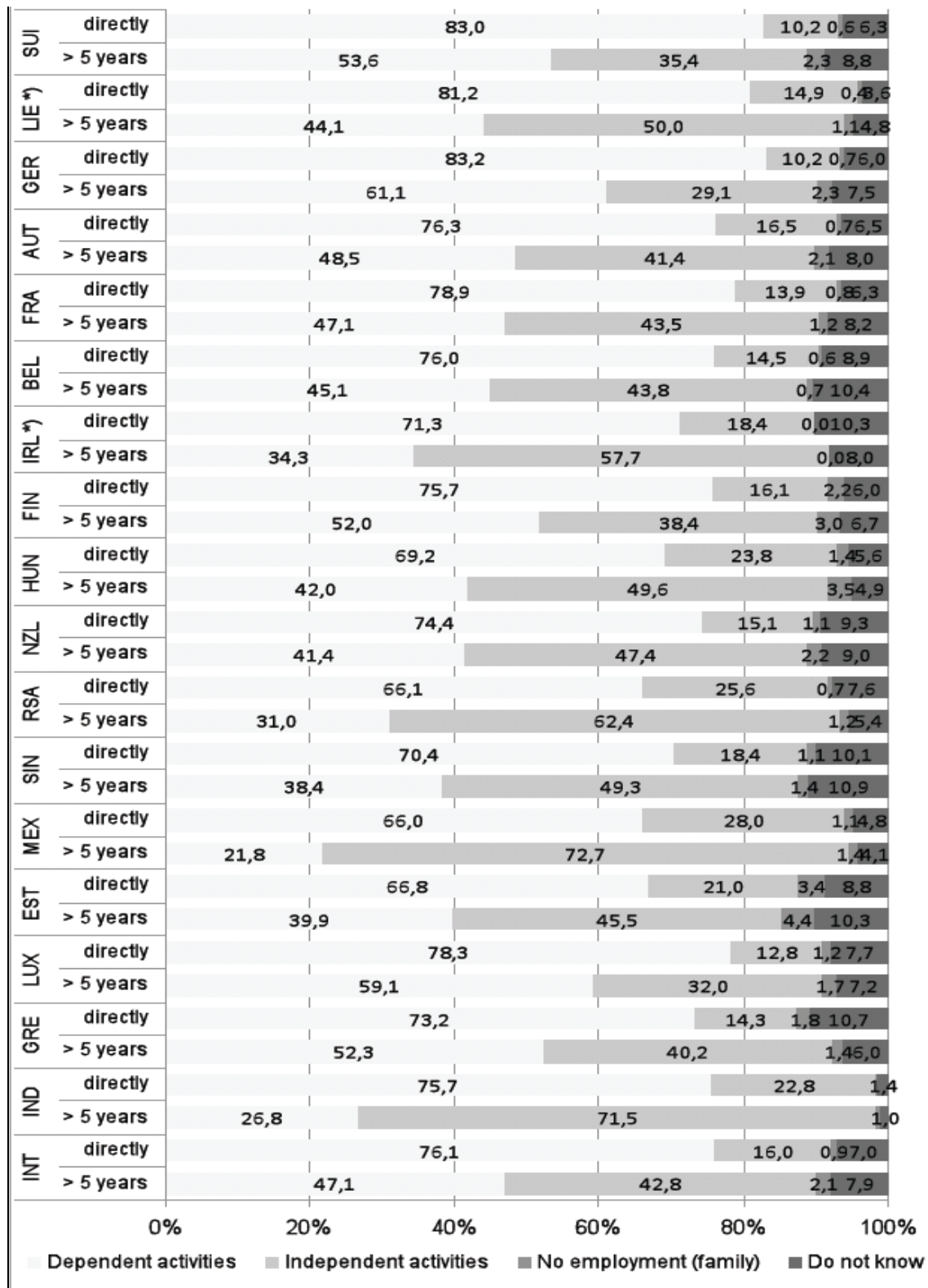
The entrepreneurial potential of students is examined from 3 dimensions: vocational aspiration, entrepreneurial intentions, and the entrepreneurial propensity index.

### 2.1 Vocational Aspiration

Respondents were asked to indicate their career aspirations, in the near term within 5 years after their studies and in the longer term after more than 5 years of their studies, from a list of 16 response categories (please refer to **Table 4** for the list of categories). Their aspirations are summarized into 3 main groups, that is (i) salaried employment, (ii) independent employment, and (iii) others which include non-employment to focus on family and other activities. In this study, independent employment is regarded as pursuing entrepreneurship. Globally, the percentage of students who aspire to be entrepreneurs within 5 years of graduating ranges from 10.2% for Switzerland (SUI) and Germany (GER) to 28% for Mexico (MEX) (**Table 4**). In Singapore, 18.4% of Singaporean students aspire to be involved in ‘independent-related’ entrepreneurial activities in the near term within 5 years of graduation (**Table 5**). This percentage is also slightly higher than the international average of 16%.

While overall 18.4% of Singapore students aspire to be entrepreneurs in the near term (<5 years) after graduation, a slightly higher percentage of polytechnic students (20.8%) compared to their university counterparts (15.1%) plan to do so. In the longer term (> 5 years after graduation), a significantly higher percentage of Singapore students (49.3%) desire independent-related entrepreneurial work. The proportion is higher for business school students; around 1 in 2 aspires to be involved in independent businesses 5 or more years after completing their studies. For non-business students, a lower proportion (41.1%) expressed this long-term aspiration.

Table 4: Global Vocational Aspirations



Source: GUESSS 2008 International Report (Fueglister et al. 2009)

**Table 5: Vocational Aspirations for Singapore**

Desired Job	Within 5 years of graduation					5 years or more after graduation				
	Total Sample (N = 2,319)	Business (n = 627)	Non-Bus. (n = 1,692)	Univ (n = 1,116)	Poly (n = 1,203)	Total Sample (N = 2,319)	Business (n = 627)	Non-Bus. (n = 1,692)	Univ (n = 1,116)	Poly (n = 1,203)
<b>Salaried (%)</b>										
Work for a very small enterprise	2.3	1.4	2.6	1.9	2.7	0.9	0.5	1.0	1.0	0.7
Work for a small company	9.7	8.1	10.3	5.7	13.5	2.5	1.4	2.8	2.6	2.3
Work for a medium company	16.7	20.3	15.4	15.2	18.2	5.5	5.7	5.4	4.3	6.6
Work for a major company	26.4	37.1	22.5	37.4	16.3	17.1	22.0	15.3	17.0	17.3
Work for a university/technical	7.9	1.6	10.3	13.4	2.8	7.3	2.2	9.2	10.6	4.2
Public service	6.0	4.0	6.7	4.1	7.7	4.5	3.2	5.0	3.5	5.5
<b>Total salaried</b>	<b>69.0</b>	<b>72.5</b>	<b>67.8</b>	<b>77.7</b>	<b>61.2</b>	<b>37.8</b>	<b>35.0</b>	<b>38.7</b>	<b>39.0</b>	<b>36.6</b>
<b>Independent (%)</b>										
Continue in parents' business	2.5	3.2	2.2	1.2	3.7	2.0	3.0	1.7	2.2	1.8
Take over an existing company	0.8	0.5	0.9	0.5	1.1	1.8	1.8	1.8	1.3	2.2
Set up a franchised company	1.3	1.3	1.3	1.2	1.4	3.2	3.5	3.1	3.3	3.2
Partner in an existing company	1.9	2.4	1.7	1.7	2.0	5.0	5.6	4.7	5.0	4.9
Continue with a company I established	1.9	1.1	2.2	2.0	1.8	3.4	3.7	3.3	3.8	3.1
Set up a company	6.2	6.5	6.1	6.2	6.2	28.1	32.3	26.5	30.3	26.1
Commence self-employment	3.5	2.9	3.7	2.3	4.6	4.9	4.6	5.1	4.2	5.6
<b>Total independent</b>	<b>18.4</b>	<b>17.9</b>	<b>14.4</b>	<b>15.1</b>	<b>20.8</b>	<b>49.3</b>	<b>49.9</b>	<b>41.1</b>	<b>50.1</b>	<b>46.9</b>
<b>Other (%)</b>										
Concentrate on family	1.1	0.8	1.2	0.7	1.4	1.3	1.6	1.2	1.1	1.6
Don't know yet	9.9	7.7	10.7	5.5	13.9	10.7	7.8	11.8	8.3	12.8
Other activities	1.9	1.1	2.2	1.0	2.7	1.8	1.1	2.1	1.5	2.1
<b>Total (%)</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

## 2.2. Entrepreneurial Intentions

Entrepreneurial intentions rate is an indicator of the general level of interest in entrepreneurship. It is measured as the proportion of students who indicated that they have at least given a thought to eventually starting their own businesses. Globally, entrepreneurial intentions range from 59.4% for Germany to 91% for Mexico (**Table 6**). In Singapore, 81% of respondents expressed entrepreneurial intentions, significantly higher than the international average of 71.3%. The intentions rate in Singapore is comparable across fields of study (business versus non-business) and type of IHLs (university versus polytechnic) (**Table 7**). However, there is a difference between university students studying at different levels - undergraduates (Bachelor degree students) and graduates (comprising Masters and PhD students). A higher proportion of undergraduates (87.1%) more so than graduates (71.9%) have expressed thoughts of setting up their own business.

**Table 6: Global Entrepreneurial Intentions**

	No, never	Yes, would like to eventually	Yes, already founded a business*
<b>International</b>	<b>26.0</b>	<b>71.3</b>	<b>2.7</b>
Business School	19.0	77.6	3.4
Non-Business	28.3	69.2	2.5
Mexico	7.2	91.0	1.8
South Africa	8.2	89.4	2.3
<b>Singapore</b>	<b>16.5</b>	<b>81.4</b>	<b>2.1</b>
Hungary	16.8	79.6	3.7
New Zealand	18.3	76.6	5.1
France	23.1	76.0	0.8
Estonia	19.5	75.8	4.7
Austria	24.8	70.8	4.4
Belgium	28.5	70.6	0.7
Finland	31.9	64.0	4.0
Switzerland	36.9	61.8	1.3
Germany	37.2	59.4	3.3

\* Includes both current and former entrepreneurs

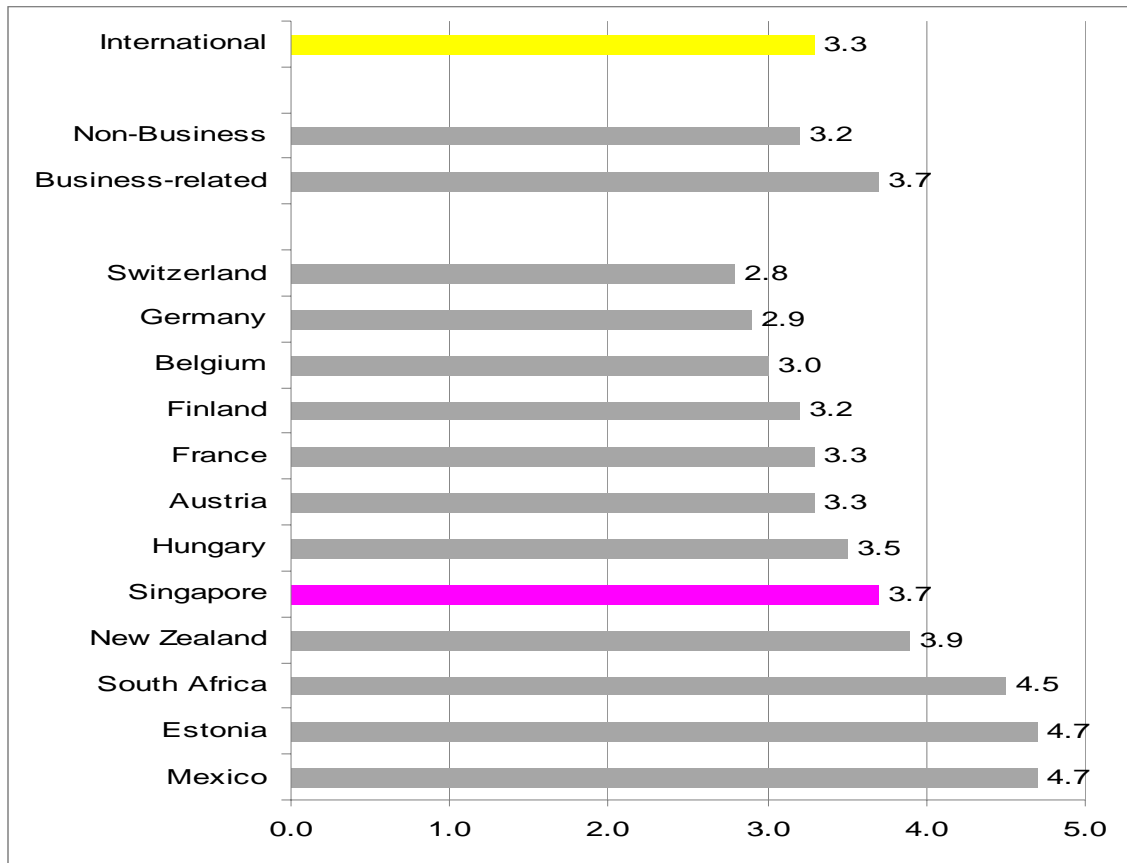
**Table 7: Entrepreneurial Intentions for Singapore**

Thoughts of setting up own business	Total Sample (N = 2,319)	Course of Study		Type of IHL		Level of Study	
		Bus. School (n = 627)	Non-Bus. (n = 1,692)	Univ (n = 1,116)	Poly (n = 1,203)	Undergrads (n = 6,58)	Graduates / Post-grads (n = 458)
No, never	16.5	12.6	18.0	16.2	16.8	11.1	24.2
Yes, would like to eventually start	81.4	85.0	80.0	81.1	81.7	87.1	71.9
Yes, founded a business	2.1	2.4	2.0	2.7	1.5	1.8	3.9
Total	100	100	100	100	100	100	100

**2.3. Entrepreneurial Propensity Index**

The ‘entrepreneurial propensity’ index is computed based on two components: the students’ entrepreneurial intentions; and the steps taken to start a business. The maximum value of the index is 10; minimum is 1. The international average of the index is 3.3 (**Table 8**). For a more detailed explanation on the computation, please refer to Fueglistaller et al. (2009, pg39). The entrepreneurial propensity index ranges from 2.8 for Switzerland to 4.7 for Mexico and Estonia. Singapore’s index stands at 3.7, slightly higher than the international average of 3.3 and the indices of advanced OECD countries including Switzerland, Germany, Belgium and Finland. Globally, business students display a higher entrepreneurial propensity (3.7) than their non-business counterparts (3.2).

**Table 8: Entrepreneurial Propensity Index\***



\* In the International Report (Fueglistaller et al. 2009, pg21), this is referred to as the Entrepreneurial Power Index.



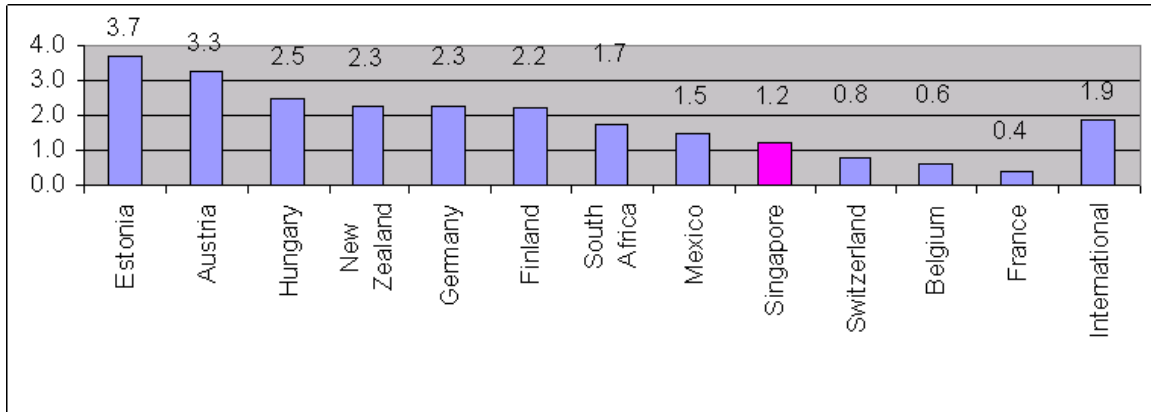
### 3. Actual Entrepreneurial Activities

The following section presents the findings on students' actual entrepreneurial activities namely, the active entrepreneurial rate, start-up survival rate, and satisfaction levels from self-employment.

#### 3.1 Active Entrepreneurial Rate

The active entrepreneurial rate\* is measured as the percentage of students who are currently active entrepreneurs. The rate ranges from 0.4% for France to 3.7% for Estonia, with an “international” average of 1.9% (Figure 6). Singapore’s active entrepreneurial rate is 1.2%, slightly lower than the “international” average rate.<sup>1</sup>

Figure 6: Active Entrepreneurial Rate\*



#### 3.2 Start-up Survival Rate

Overall, the survival rate of businesses started by Singaporean students is 77.1% (Table 9). A higher percentage of businesses founded by polytechnic students (88.9%) compared to university students (70%) were still in existence at the point of survey. The differences in survival rates between business and non-business students as well as undergraduates

\* In the International Report (Fueglistaller et al. 2009, pg23), this is referred to as the Foundation Rate.

<sup>1</sup> The active entrepreneurial rate differs from the measure of % that have already started a business, reported in Table 6. The latter measure includes former entrepreneurs who founded businesses while studying, but who have discontinued the businesses and were no longer active entrepreneurs at the time of the survey. The active entrepreneurial rate only includes those who were entrepreneurs when surveyed.

and graduates/post-graduates were marginal. It is important to note that the unusually high survival rate is probably due to the very young age of the start-ups, about less than one year old on average.

**Table 9: Start-Up Survival Rate for Singapore**

	Overall	Type of Course		Type of IHL		Level of Study	
	n = 48	Business (n=15)	Non-Business (n=33)	University (n=30)	Polytechnic (n=18)	Undergraduates (n=12)	Grads / Postgrads (n=18)
		%	%	%	%	%	%
Surviving	77.1%	73.3	78.8	70.0	88.9	75.0	66.7

**3.3 Satisfaction from Self-Employment**

Among students who have started businesses, we solicited their level of satisfaction on a list of 7 statements pertaining to life in general and their choice of entrepreneurial careers (please refer to **Table 10** for the complete list). Overall, the level of satisfaction from self-employment is slightly higher for Singapore entrepreneurs compared to the international sample. In particular, Singapore entrepreneurs indicated a slightly higher satisfaction on two dimensions; “With hindsight I am very happy that I founded my company” (3.52 for Singapore versus 3.29 internationally) and “I would recommend anyone to found a company, if he or she feels capable of doing so” (3.35 for Singapore versus 2.99 internationally).

Among the Singapore sample, business school students reported greater satisfaction from self-employment as compared to their non-business school counterparts, particularly in terms of their willingness to recommend others to found a company (3.67 for business students versus 3.21 for non-business students) (**Table 10a**). Furthermore, undergraduates more so than graduates/post-graduates derive greater satisfaction from starting their own businesses (3.42 for undergraduates versus 3.00 for graduates/post-graduates) (**Table 10b**).

**Table 10: Level of Satisfaction from Self-Employment**

**a) Global vs Singapore, and by Field of Study**

Likert scale (1-4)	International Sample (n=1,725)	Singapore Sample (n=48)	Business (n=15)	Non-Business (n=33)
With hindsight, I am very happy that I founded my company.	3.29	3.52*	3.47	3.55
I would recommend anyone to found a company, if he or she feels capable of doing so.	2.99	3.35**	3.67**	3.21
All in all, I have become more satisfied with my life through the founding of my company.	2.99	3.31	3.33	3.30
I will always try to remain self-employed for the rest of my life.	2.77	2.90	3.07	2.82
I realize more and more that the risks of being self-employed are not outweighed by particular opportunities.	2.56	2.85	2.73	2.91
I often wonder I could have a better life as an employee.	2.31	2.50	2.33	2.58
If I had not put so much time and effort into my company, I would prefer to be employed in another company.	2.05	2.42	2.27	2.48

\* Sig. at 10%; \*\* Sig at 5%; 1 – Completely disagree; 4 – Completely agree

**b) Singapore – by IHL type and Level of Study**

Likert scale (1-4)	University (n=30)	Polytechnic (n=18)	Undergrads (n=12)	Grads/Post-grads (n=18)
With hindsight, I am very happy that I founded my company.	3.50	3.56	3.75**	3.33
I would recommend anyone to found a company, if he or she feels capable of doing so.	3.50*	3.11	3.67	3.39
All in all, I have become more satisfied with my life through the founding of my company.	3.17	3.56*	3.42**	3.00
I will always try to remain self-employed for the rest of my life.	2.87	2.94	3.08	2.72
I realize more and more that the risks of being self-employed are not outweighed by particular opportunities.	2.83	2.89	3.08	2.67
I often wonder I could have a better life as an employee.	2.47	2.56	2.42	2.50
If I had not put so much time and effort into my company, I would prefer to be employed in another company.	2.37	2.50	2.25	2.44

\* Sig. at 10%; \*\* Sig at 5%; 1 – Completely disagree; 4 – Completely agree

#### 4. How Entrepreneurial Intentions & Activities Vary Among Singapore Students (demographic characteristics, educational levels, family influence)

Existing studies in the literature have reported the association of demographic factors including age (Bates, 1995), gender (Matthews and Moser, 1996) and educational attainments (Dolinsky et al., 1993) with entrepreneurial intentions and start-ups, and the positive effects of family influence (Storey, 1994). In GUESSSS 2008, we examined the profile of students on these dimensions.

In Singapore, entrepreneurial intentions were found to be higher among male students (84.4%) than among female students (78.5%) (**Table 11**) Moreover, a larger proportion of graduates (4.5%) and postgraduates (3.2%) have started their own businesses compared to undergraduates/diploma students (1.5%/1.8%) (**Table 12**) In terms of family influence on actual start-ups, the proportion of those who have started or intend to start their businesses is higher among students with entrepreneurial family background, where either father/mother/grandparent has always been self-employed and still is (**Table 13**).

Overall, male students in Singapore display higher entrepreneurial tendencies compared to their female counterparts (**Table 14**). Higher proportions of male students have at least thought about starting their own businesses (84.3% compared to 78.5% for female students) and have entrepreneurial aspirations both in the short term (20.8% vs 16%) and long term (53.3% vs 43.5%). Furthermore, 1.9% of male students have already started a business while studying, while only 0.5% of female students have done so.

Male student entrepreneurs in Singapore IHLs are also on the whole more satisfied than female entrepreneurs. On six of the seven satisfaction-related statements, males were significantly more satisfied than females (**Table 14**). The difference in satisfaction levels between the two genders was most pronounced in three dimensions: “I am very happy I founded my company” (3.44 vs 2.92), “I will always try to remain self employed” (3.44 vs 3.08) and “I often wonder if I could have a better life as an employee” (2.42 vs 3.06).

**Table 11: Entrepreneurial Intentions of Singapore Students by Demographic Groups**

Characteristics	Current Entrepreneurs (n = 48)	Intending Entrepreneurs (n = 1,887)	Non Intending Entrepreneurs (n = 384)	Total
Average Age	25.8	21.5	21.6	23.0
<b>GENDER</b>				
Male	3.1%	84.4%	12.5%	100%
Female	1.0%	78.5%	20.5%	100%
<b>IHL TYPE</b>				
University	2.7%	81.1%	16.2%	100%
Polytechnic	1.5%	81.7%	16.8%	100%
<b>FIELDS OF STUDY</b>				
Business	2.4%	85.0%	12.6%	100%
Non-Business	2.0%	80.0%	18.0%	100%

**Table 12: Entrepreneurial Intentions of Singapore Students by Educational Levels**

Education Level	Already Entrepreneurs (n = 48)	Intending Entrepreneurs (n = 1,887)	No Entrepreneurial Intention (n = 384)	Total (%) (N = 2,319)
Diploma courses	1.5 %	81.8 %	16.7 %	100
Undergraduate studies	1.8 %	87.1 %	11.1 %	100
Graduate studies	4.5 %	72.0 %	23.5 %	100
Postgraduate studies	3.2%	71.7 %	25.1 %	100

**Table 13: Entrepreneurial Intentions of Singapore Students by Family Influence Groups**

Family Influence	Already Entrepreneurs (n = 48)	Intending Entrepreneurs (n = 1,887)	Non Intentions (n = 384)	Total (%)
Either Father/ Mother/ Grandparent has always been self-employed and still is.	2.5%	84.9%	12.6%	100
Neither Father/ Mother/ Grandparent has been self-employed	1.4%	76.8%	21.8%	100

**Table 14: Entrepreneurial Intentions & Satisfaction from Self-Employment by Gender**

	MALE	FEMALE
<b>Entrepreneurial Intentions / Interest</b>	84.3%	78.5%
<b>Entrepreneurial Aspiration (&lt; 5 years from graduation)</b>	20.8%	16.0%
<b>Entrepreneurial Aspiration (&gt; 5 years after graduation)</b>	53.3%	43.5%
<b>Already started a business (includes former &amp; current entrepreneurs)</b>	1.9%	0.5%
<b><u>Satisfaction from Self-Employment</u></b>		
a) With hindsight, I am very happy that I founded my company.	3.44*	2.92
b) I would recommend anyone to found a company, if he or she feels capable of doing so.	2.47	2.58
c) All in all, I have become more satisfied with my life through the founding of my company.	3.61*	3.25
d) I will always try to remain self-employed for the rest of my life.	3.44*	3.08*
e) I realize more and more that the risks of being self-employed are not outweighed by particular opportunities.	2.42**	3.06
f) I often wonder I could have a better life as an employee.	2.31*	2.75
g) If I had not put so much time and effort into my company, I would prefer to be employed in another company.	2.58*	2.94
<i>(1 – Completely disagree; 4 – Completely agree)</i>		
* Sig. at 10%; ** Sig at 5%		

## 5. Business Goals of Actual and Intending Student Entrepreneurs in Singapore (industrial sector, degree of innovation, experience in the intended business, priority for new business)

To examine if there is a common thread that runs through student businesses in Singapore, we compared the business goals of different groups of Singapore students, that is business versus non-business students, undergraduates (Bachelor degree students) versus graduates (Masters and PhD students), and actual versus intending entrepreneurs. The comparisons were made on a range of factors including industrial sector, degree of innovation, experience in various aspects of the business, and priorities for the business.

The findings revealed that business students were interested in starting mainly services-related businesses (71.3% for business students versus 62.8% for non-business students), while non-business school students were inclined to start manufacturing-based businesses (16.9% for non-business students versus 5.1% for business students) (**Table 15**). Furthermore, manufacturing-based businesses were more popular among graduates (23.2% for graduates versus none for undergraduates) compared to undergraduates who preferred services-related businesses (91.7% for undergraduates versus 56.3% for graduates) (**Table 16**).

In terms of innovation, a higher proportion of non-business students (17.5%) compared to business students (9.0%) offer or intend to offer product/services that are totally new worldwide (**Table 17**). Furthermore, a higher percentage of intending graduate entrepreneurs as compared to their undergraduate counterparts intend to bring something completely new worldwide or to the region (**Table 18**). The opposite is found for actual entrepreneurs; a higher percentage of undergraduates (16.7%) have businesses around new concepts, compared to 11.1% of actual entrepreneurs who are graduates.

Among actual entrepreneurs, the majority have experience in different areas of their businesses e.g. the industry, products, customer groups, and distribution channels (**Table 19**). Additionally, the priorities set forth for new businesses among actual and intending

entrepreneurs are comparable across the different fields of studies and type of IHLs (Table 20).

**Table 15: Industrial Sector – Comparison Across Fields of Study and Type of IHLs**

Industrial Sectors	Fields of study				Type of IHLs			
	Business		Non Business		University		Polytechnic	
	Intended (n = 533)	Actual (n = 15)	Intended (n=1354)	Actual (n = 33)	Intended (n = 903)	Actual (n = 30)	Intended (n = 983)	Actual (n=18)
Primary industries (agriculture, forestry, FIS)	2.0	0	2.7	0	2.3	0	2.8	0
Manufacturing	5.1	6.7	16.9	6.1	12.7	6.7	14.3	5.5
Primarily Trade	21.6	13.3	17.6	24.2	16.0	16.7	21.3	27.8
Primarily Services	71.3	80.0	62.8	69.7	69.0	76.6	61.6	66.7
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

**Table 16: Industrial Sector – Comparison Across Levels of Study**

Industrial Sectors	Levels of study				Status of Start-up	
	Undergraduates		Graduates/Post-graduates		Intended (n=1887)	Actual (n= 48)
	Intended (n = 573)	Actual (n = 12)	Intended (n=330)	Actual (n = 18)		
Primary industries (agriculture, forestry, FIS)	0	1.7	3.7	3.5	2.5	0
Manufacturing	0	6.3	23.2	22.6	13.6	6.3
Primarily Trade	8.3	15.0	16.8	17.1	18.7	20.8
Primarily Services	91.7	77.0	56.3	56.8	65.2	72.9
<b>Total</b>	100.0	100.0	100.0	100.0	100	100



**Table 17: Level of Innovation – Comparison Across Fields of Study and Type of IHLs**

Level of Innovation	Fields of study				Type of IHLs				Status of Start-up	
	Business		Non Business		University		Polytechnic		Intended (n= 1887)	Actual (n= 48 )
	Intended (n= 533)	Actual (n= 15)	Intended (n= 1354)	Actual (n= 33)	Intended (n= 903)	Actual (n= 30)	Intended (n= 983)	Actual (n= 18)		
New worldwide	9.0	6.7	17.5	18.2	13.3	13.3	16.7	16.7	15.1	14.6
New for your region	31.4	20.0	30.4	30.3	29.7	26.7	31.5	27.7	18.8	12.5
New for your country	18.9	20.0	18.6	9.1	19.9	10.0	17.7	16.7	30.6	27.1
Traditional proven concept	40.7	53.3	33.5	42.4	37.1	50.0	34.1	38.9	35.5	45.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100

**Table 18: Level of Innovation – Comparison Across Levels of Study**

Level of Innovation	Levels of study				Status of Start-up	
	Undergraduates		Graduates/Post-graduates		Intended (n=1887)	Actual (n= 48 )
	Intended (n = 573 )	Actual (n =12 )	Intended (n=330)	Actual (n = 18 )		
New worldwide	11.5	16.7	16.2	11.1	15.1	14.6
New for your region	28.6	33.3	31.8	22.2	18.8	12.5
New for your country	20.6	16.7	18.7	5.6	30.6	27.1
Traditional proven concept	39.3	33.3	33.3	61.1	35.5	45.8
Total	100.0	100.0	100.0	100.0	100	100

**Table 19: Experience – Comparison Between Actual and Intending Entrepreneurs**

	Total Sample (N = 2,319)			Actual Entrepreneurs (n = 48)			Intending Entrepreneurs (n = 1,887)		
	No specific experience	Up to 1 yr	> 1 yr	No specific experience	Up to 1 yr	> 1 yr	No specific experience	Up to 1 yr	> 1 yr
Experience in industry	78.3	7.4	14.3	33.3	6.3	60.4	79.4	7.5	13.1
Experience in products / Services	68.9	11.0	20.1	22.9	18.8	58.3	70.1	10.8	19.1
Experience in customer groups	67.7	12.3	20.0	22.9	20.8	56.3	68.8	12.1	19.1
Experience in Distribution channel	84.0	7.2	8.8	37.5	18.8	43.7	85.2	6.9	7.9

**Table 20: Priority for Business – Comparison of Singapore Students**

PRIORITY	Fields of study				Types of IHL				Status of Start-up	
	Business		Non Business		University		Polytechnic		Intended (n=1887)	Actual (n= 48 )
	Intended (n = 533 )	Actual (n =15 )	Intended (n=1354)	Actual (n = 33 )	Intended (n = 903)	Actual (n = 30)	Intended (n)= 983)	Actual (n=18)		
Innovation	3.91	4.27	4.09	4.21	3.97	4.20	4.11	4.28	4.04	4.23
Rate of growth	4.06	4.00	3.99	4.15	3.94	3.97	4.07	4.33	4.01	4.10
Net profit over 5 years	4.03	4.13	3.91	4.06	3.91	4.13	3.98	4.00	3.95	4.08
Company prestige	3.91	4.13	3.90	3.94	3.79	3.93	4.01	4.11	3.90	4.00
Net profit over the coming year	3.82	3.80	3.80	3.85	3.58	3.67	4.01	4.11	3.80	3.83
Assets and reserves	3.69	4.00	3.75	3.94	3.54	3.67	3.92	4.44	3.74	3.96
Services to community	3.60	3.53	3.79	3.67	3.63	3.63	3.84	3.61	3.74	3.63
Employee rewards and benefits	3.63	4.33	3.66	3.76	3.57	3.97	3.72	3.89	3.65	3.94
Price leadership	3.40	3.53	3.61	3.55	3.30	3.47	3.78	3.67	3.55	3.54
Market share	3.50	3.87	3.48	3.67	3.42	3.63	3.55	3.89	3.49	3.73
Dividend payout	3.09	3.00	3.38	3.30	2.97	2.93	3.60	3.67	3.30	3.21

## 6. Intending Entrepreneurs (steps taken to start a business)

Ajzen’s (1991) theory of planned behaviour postulates that entrepreneurial intentions are a necessary condition for starting a business. In this section, we focus on the subset of students who have expressed intentions to start their own business. In particular, we determined how serious these students were about establishing a business by asking them a series of questions on the steps they have taken towards setting up a business. These steps range from tentative activities including thinking through an initial business idea to concrete activities including developing a prototype of the product/service.

Overall, close to half and one-third of the intending entrepreneurs in the global and Singapore samples respectively have not yet taken any steps in setting up their business (**Table 21**). However, a larger percentage of intentional entrepreneurs in Singapore compared to the global sample have embarked on both the initial and concrete steps toward their potential start-ups. More than half indicated that they have thought through initial business ideas, while about one-fifth have written down their initial business ideas and gathered start-up specific information. More encouragingly, almost 1 in 5 intending entrepreneurs in Singapore has developed a business plan compared to fewer than 1 in 10 of the global sample of intending entrepreneurs.

**Table 21: Intending Entrepreneurs – Steps Taken to Start a Business**

	Global Sample of Intending Entrepreneurs (N = 45,295) (%)	Singapore Sample of Intending Entrepreneurs (N = 1,887) (%)
No steps taken	46.7	33.4
Thinking through initial business ideas	44.6	61.8
Writing down initial business Ideas	14.7	24.3
Gathering start-up specific Information	18.1	23.3
Developing a business plan	8.1	18.9
Visiting start-up specific events	8.2	11.8
Talking to potential sources of financing	5.2	10.4
A prototype of the product/service exists	6.1	9.9
Determining a start-up date	2.7	6.5

## 7. Entrepreneurship Climate in Tertiary Institutions

As a result of the growing emphasis worldwide on entrepreneurship as the catalyst for economic development and job creation, policy makers have developed a wide array of measures to support entrepreneurship (Maillat, 1998). Key among these is the call for academic institutions to contribute through appropriate entrepreneurship educational programmes (Laukkanen, 2000). A similar trend is observed in Singapore, where various entrepreneurship courses, programmes, and activities are offered by the IHLs.

A study by Johannisson (1991) explained that entrepreneurship education provides five learning objectives, where participants will develop the: know why (developing the right attitudes and motivation for start-up), know how (acquiring the technical abilities and skills needed to develop a business); know who (fostering networks and contacts for entrepreneurial ventures); know when (achieving the sharp intuition to act at the correct moment); and know what (attaining the knowledge base and information for new venture development) aspects of entrepreneurial learning.

Given the potentially positive influence of entrepreneurship education on entrepreneurial intentions, we examined the students' *perception of importance, awareness, participation, and satisfaction* on the IHLs' entrepreneurship courses, programmes, and infrastructure. These courses include entrepreneurship seminars and lectures; programmes include exchange of experiences with founders, start-up business games, business plan project seminars; and infrastructure includes start-up financing through the university, incubators, start-up coaching, contact for general questions.

### 7.1 Importance

On a scale of 1 (very unimportant) to 6 (very important), the importance placed on entrepreneurship courses, programmes & infrastructure range from 3.58 for Germany to 4.62 for South Africa. Singapore's rating is 4.34, higher than the international average of

3.97 (**Table 22**). In Singapore, entrepreneurs from a business school background placed a higher importance on start-up coaching, business plan seminars, and entrepreneurship lectures than their non-business school counterparts (**Table 23**). Graduate entrepreneurs on the other hand, felt that start-up financing through the university and business plan seminars were more important, compared to undergraduate entrepreneurs (**Table 24**). Comparing university with polytechnic students, the former placed greater importance on start-up coaching while the latter rated start-up business games as more important (**Table 25**).

**Table 22: Global Ratings on the Importance Placed on Entrepreneurship Courses, Programmes, and Infrastructure**

Country	Importance of Entrepreneurship Courses, Programmes, Infrastructure* (Likert scale from 1 = very unimportant to 6 = very important)
South Africa	4.62
<b>Singapore</b>	<b>4.34</b>
Estonia	4.28
France	4.25
Hungary	4.21
Mexico	4.15
Finland	4.08
Austria	3.90
Belgium	3.90
Switzerland	3.83
New Zealand	3.76
Germany	3.58
<b>International</b>	<b>3.97</b>

**Table 23: Importance of Entrepreneurship Courses, Programmes and Infrastructure for Singapore (Business vs Non Business)**

Likert Scale (1-6)	Business			Non-Business		
	No intention (n=79)	Intending entrep. (n=533)	Actual entrep. (n=15)	No intention (n=305)	Intending entrep. (n=1354)	Actual entrep. (n=33)
Start-up financing through the university	4.29	4.71	4.80	4.21	4.53	4.61
Start-up coaching	4.28	4.62	5.07*	4.09	4.43	4.61
Incubators (service center for early stage start-ups)	4.05	4.55	4.80	4.05	4.45	4.85
Regular round tables for founders (e.g. exchange of experiences)	4.25	4.54	4.93	4.06	4.37	4.73
Contacts for general enquiries	4.28	4.53	4.80	3.94	4.37	4.55
Business plan project seminars	4.11	4.53	4.93**	3.92	4.23	4.33
Start-up business games / start-up simulations	3.99	4.41	4.33	3.88	4.21	4.09
Entrepreneurship seminars and lectures	3.96	4.33	4.67*	3.82	4.19	4.21

\* Sig. at 10%; \*\* Sig. at 5%; 1 – Very unimportant; 6 – Very important

**Table 24: Importance of Entrepreneurship Courses, Programmes and Infrastructure for Singapore (Undergraduates vs Graduates / Post-Graduates)**

Likert Scale (1-6)	Undergraduates			Graduates / Post-graduates		
	No intention (n=73)	Intending entrep. (n=573)	Actual entrep. (n=12)	No intention (n=110)	Intending entrep. (n=330)	Actual entrep. (n=18)
Start-up financing through the university	4.33	4.77	4.58	4.08	4.52	5.11**
Start-up coaching	4.04	4.65	5.50**	3.94	4.36	4.78
Incubators (service center for early stage start-ups)	4.10	4.69	5.33**	3.91	4.51	4.67
Regular round tables for founders (e.g. exchange of experiences)	4.25	4.50	4.83	4.10	4.30	4.72
Contacts for general enquiries	4.33	4.61	5.00	3.95	4.20	4.83
Business plan project seminars	3.97	4.37	4.17	3.88	4.31	4.72**
Start-up business games / start-up simulations	3.96	4.28	3.83	3.78	4.14	4.06
Entrepreneurship seminars and lectures	3.89	4.22	4.58	3.80	4.11	4.44

\* Sig. at 10%; \*\* Sig. at 5%; 1 – Very unimportant; 6 – Very important

**Table 25: Importance of Entrepreneurship Courses, Programmes and Infrastructure for Singapore (University vs Polytechnic)**

Likert Scale (1-6)	University			Polytechnic			No intention (n=384)	Intending entrep (n=1887)	Actual entrep (n=48)
	No intention (n=181)	Intending entrep (n=903)	Actual entrep (n=30)	No intention (n=202)	Intending entrep (n=983)	Actual entrep (n=18)			
Start-up financing through the university	4.18	4.68	4.90 **	4.27	4.49	4.28	4.23	4.58	4.67
Start-up coaching	3.98	4.54	5.07**	4.26	4.43	4.22	4.13	4.48	4.75
Incubators (service center for early stage start-ups)	3.98	4.62	4.93	4.11	4.35	4.67	4.05	4.48	4.83
Regular round tables for founders (e.g. exchange of experiences)	4.15	4.43	4.77	4.05	4.41	4.83	4.10	4.42	4.79
Contacts for general enquiries	4.10	4.46	4.90**	3.93	4.37	4.17	4.01	4.41	4.63
Business plan project seminars	3.92	4.35	4.50	4.00	4.28	4.56	3.96	4.32	4.52
Start-up business games / start-up simulations	3.86	4.23	3.97	3.96	4.29	4.50**	3.90	4.26	4.17
Entrepreneurship seminars and lectures	3.83	4.18	4.50*	3.86	4.27	4.11	3.85	4.23	4.35

\* Sig. at 10%; \*\* Sig. at 5%; 1 – Very unimportant; 6 – Very important

## 7.2 Awareness

The percentage of respondents, who are aware of entrepreneurship courses, programmes and infrastructure ranges from 16.2% for Austria to 71% for Mexico (**Table 26**). In Singapore, 37.9% of the respondents were aware of these university support services, higher than the international average of 20.4%. A higher percentage of entrepreneurs with a business school background were aware of university services such as start-up coaching, entrepreneurship lectures, and start-up business games as compared to their non-business school counterparts (**Table 27**). On a similar note, more university and undergraduate entrepreneurs were aware of all the entrepreneurship support services compared to polytechnic and graduate entrepreneurs (**Table 28 and Table 29**).

**Table 26: Awareness of Entrepreneurship Courses, Programmes and Infrastructure  
- Global**

Country	Awareness of entrepreneurship courses, programmes and infrastructure* (% yes)
<b>Mexico</b>	71.0
<b>France</b>	45.4
<b>Singapore</b>	<b>37.9</b>
<b>Finland</b>	33.3
<b>South Africa</b>	27.7
<b>Estonia</b>	21.9
<b>Belgium</b>	18.5
<b>Switzerland</b>	17.7
<b>Hungary</b>	17.1
<b>New Zealand</b>	17.1
<b>Germany</b>	16.5
<b>Austria</b>	16.2
<b>International</b>	<b>20.4</b>

\* Based on the average percentage of awareness on entrepreneurship seminars and lectures, exchange of experiences with founders, start-up business games, business plan project seminars, start-up financing through the university, incubators, start-up coaching, contact for general questions.



**Table 27: Awareness of Entrepreneurship Courses, Programmes and Infrastructure in Singapore (Business vs Non Business)**

Percentage of 'Yes' (%)	Business			Non-Business		
	No intention (n=79)	Intending entrep (n=533)	Actual entrep (n=15)	No intention (n=305)	Intending entrep (n=1354)	Actual Entrep (n=33)
Business plan project seminars	53.2	50.7	46.7	31.8	42.7	45.5
Start-up coaching	24.1	30.0	33.3	20.3	30.5	24.2
Entrepreneurship seminars and lectures	78.5	77.5	80.0	-	67.9	57.6
Start-up business games / start-up simulations	36.7	41.7	60.0	28.2	35.6	36.4
Regular round tables for founders (e.g. exchange of experiences)	44.3	35.6	26.7	27.5	28.1	21.2
Contacts for general enquiries	29.1	39.8	26.7	37.7	36.6	24.2
Start-up financing through the university/poly	-	38.1	33.3	18.4	-	33.3
Incubators (service centre for early stage start-ups)	17.7	31.9	33.3	20.0	30.1	36.4

**Table 28: Awareness of Entrepreneurship Courses, Programmes and Infrastructure in Singapore (Undergraduates vs Graduates/Post-Graduates)**

Percentage of 'Yes' (%)	Undergraduates			Graduates / Post-graduates		
	No intention (n=73)	Intending entrep. (n=573)	Actual entrep. (n=12)	No intention (n=110)	Intending entrep. (n=330)	Actual entrep. (n=18)
Business plan project seminars	63.0	68.2	75.0	38.2	43.1	55.6
Start-up coaching	24.7	42.9	50.0	17.3	26.3	16.7
Entrepreneurship seminars and lectures	79.5	89.9	91.7	60.0	64.2	72.2
Start-up business games / start-up simulations	37.0	55.5	83.3	26.4	32.7	33.3
Regular round tables for founders (e.g. exchange of experiences)	45.2	47.6	41.7	29.1	28.1	22.2
Contacts for general enquiries	38.4	53.4	41.7	33.6	33.6	16.7
Start-up financing through the university/poly	28.8	60.0	100.0	29.1	37.9	11.1
Incubators (service centre for early stage start-ups)	24.7	57.4	91.7	30.9	39.8	16.7

**Table 29: Awareness of Entrepreneurship Courses, Programmes and Infrastructure in Singapore (University vs. Polytechnic)**

Percentage of 'Yes' (%)	University			Polytechnic			No intention (n=384)	Intending entrep (n=1887)	Actual entrep (n=48)
	No intention (n=181)	Intending entrep (n=903)	Actual entrep (n=30)	No intention (n=202)	Intending entrep (n=983)	Actual entrep (n=18)			
Business plan project seminars	48.6	59.0	63.3	-	32.0	16.7	36.2	44.9	45.8
Start-up coaching	19.9	36.8	30.0	21.8	24.5	22.2	21.1	30.4	27.1
Entrepreneurship seminars and lectures	68.5	80.3	80.0	54.5	61.6	38.9	60.9	70.6	64.6
Start-up business games / start-up simulations	30.9	46.8	53.3	29.2	28.5	27.8	29.9	37.3	43.8
Regular round tables for founders (e.g. exchange of experiences)	35.9	40.3	30.0	26.7	20.9	11.1	31.0	30.2	22.9
Contacts for general enquiries	35.4	46.1	26.7	36.1	29.5	22.2	35.9	-	25.0
Start-up financing through the university/poly	28.7	51.8	46.7	11.9	-	11.1	20.1	31.5	33.3
Incubators (service centre for early stage start-ups)	28.7	50.7	46.7	11.4	12.2	16.7	19.5	30.6	35.4

### 7.3 Participation and Satisfaction

The percentage of respondents participating in entrepreneurship courses, programmes, and infrastructure ranges from 12.9% for Switzerland to 34.9% for Mexico (**Table 30**). The participation rate for Singapore is 27.1%, almost on par with the international average of 25.7%. Overall, participation in university support services is higher for business school entrepreneurs compared to non-business school entrepreneurs (**Table 31**). Intending entrepreneurs who are undergraduates reported higher participation in start-up coaching and entrepreneurship lectures than their graduates counterparts (**Table 32**). However, there are no statistically significant differences between the participation rates of intending entrepreneurs who are university students and those who are polytechnic students (**Table 33**). In terms of satisfaction, business school entrepreneurs reported greater overall fulfilment of expectations from the entrepreneurship courses, programmes, and infrastructure compared to non-business school entrepreneurs (**Table 34**).

**Table 30: Participation in Entrepreneurship Courses, Programmes and Infrastructure – Global**

Country	Participation in Entrepreneurship Courses, Programmes, Infrastructure* (% yes)
Mexico	34.9
South Africa	34.7
France	33.2
Hungary	29.4
Belgium	28.7
Finland	28.3
Singapore	27.1
Estonia	26.4
New Zealand	21.9
Austria	20.1
Germany	17.6
Switzerland	12.9
<b>International</b>	<b>25.7</b>

\* Based on the average percentage of participation. Refer to note for Table 26 for definition of programs etc.

**Table 31: Participation in Entrepreneurship Courses, Programmes and Infrastructure in Singapore (Business vs Non Business)**

Percentage of 'Yes' (%)	Business			Non-Business		
	No intention (n=79)	Intending entrep (n=533)	Actual Entrep (n=15)	No intention (n=305)	Intending entrep (n=1354)	Actual Entrep (n=33)
Business plan project seminars	16.7	32.2	85.7	16.5	37.0	53.3
Start-up coaching	10.5	25.0	80.0	14.5	29.8	37.5
Entrepreneurship seminars and lectures	29.0	48.4	83.3	29.7	51.3	52.6
Start-up business games / start-up simulations	13.8	24.8	77.8	14.0	32.4	66.7
Regular round tables for founders (e.g. exchange of experiences)	22.9	26.8	75.0	19.0	34.5	57.1
Contacts for general enquiries	34.8	28.3	25.0	31.3	34.1	87.5
Start-up financing through the university/poly	0	5.9	20.0	10.7	8.9	18.2
Incubators (service centre for early stage start-ups)	14.3	7.1	20.0	3.3	9.3	16.7

**Table 32: Participation in Entrepreneurship Courses, Programmes and Infrastructure in Singapore (Undergraduates vs Graduates/Post-Graduates)**

Percentage of 'Yes' (%)	Undergraduates			Graduates / Post-graduates		
	No intention (n=73)	Intending entrep. (n=573)	Actual entrep. (n=12)	No intention (n=110)	Intending entrep. (n=330)	Actual entrep. (n=18)
Business plan project seminars	13.0	41.2	66.7	11.9	31.9	50.0
Start-up coaching	11.1	34.1	16.7	10.5	19.8	66.7
Entrepreneurship seminars and lectures	25.9	56.5	72.7	18.2	40.0	53.8
Start-up business games / start-up simulations	7.4	30.5	70.0	6.9	27.1	66.7
Regular round tables for founders (e.g. exchange of experiences)	21.2	30.0	60.0	15.6	38.0	50.0
Contacts for general enquiries	21.4	34.6	60.0	16.2	20.9	33.3
Start-up financing through the university/poly	9.5	5.2	16.7	3.1	10.5	0
Incubators (service centre for early stage start-ups)	11.1	7.6	9.1	2.9	5.4	0

**Table 33: Participation in Entrepreneurship Courses, Programmes and Infrastructure in Singapore (University vs. Polytechnic)**

Percentage of 'Yes' (%)	University			Polytechnic			No Intention (n=384)	Intending entrep (n=1887)	Actual entrep (n=48)
	No intention (n=181)	Intending entrep (n=903)	Actual Entrep (n=30)	No intention (n=202)	Intending entrep (n=983)	Actual Entrep (n=18)			
Business plan project seminars	12.5	38.6	57.9	23.5	30.2	16.7	16.5	35.5	63.6
Start-up coaching	11.1	30.4	33.3	15.9	25.7	22.2	13.6	28.4	53.8
Entrepreneurship seminars and lectures	21.8	51.9	62.5	38.2	48.7	71.4	29.5	50.4	64.5
Start-up business games / start-up simulations	7.1	29.8	68.8	20.3	30.4	80.0	13.9	30.0	71.4
Regular round tables for founders (e.g. exchange of experiences)	18.5	31.9	55.6	22.2	31.7	11.1	20.2	31.9	63.6
Contacts for general enquiries	17.2	31.0	50.0	43.8	34.1	22.2	31.9	32.4	66.7
Start-up financing through the university/poly	5.8	6.6	14.3	12.5	12.6	50.0	7.8	7.9	18.7
Incubators (service centre for early stage start-ups)	5.8	7.0	7.1	-	15.0	66.7	5.3	8.7	17.6

**Table 34: Fulfilment of Expectations from Entrepreneurship Courses, Programmes and Infrastructure in Singapore (Business vs. Non Business)**

Likert scale (1-6)	Business			Non-Business		
	No intention (n=79)	Intending entrep (n=533)	Actual entrep (n=15)	No intention (n=305)	Intending entrep (n=1354)	Actual entrep (n=33)
Contacts for general enquiries	4.75	4.37	3.00	4.39	4.31	4.14**
Start-up business games / start-up simulations	4.75	4.47	3.86**	4.25	4.35	3.13
Regular round tables for founders (e.g. exchange of experiences)	4.50	4.08	4.00	4.56	4.37	4.00
Incubators (service centre for early stage start-ups)	5.00	4.67	5.00**	5.00	4.16	3.00
Start-up financing through the university/poly	4.50	4.58	5.00	4.50	4.09	4.50
Start-up coaching	3.00	4.42	4.00**	4.00	4.28	3.33
Business plan project seminars	4.71	4.38	4.17**	4.27	4.21	3.25
Entrepreneurship seminars and lectures	3.83	4.25	4.80**	3.84	4.22	4.00

## 8. Comparisons between GUESSS 2008 and NSTB STUDY 2000

This section compares findings from the NSTB Student Technopreneurship Survey 2000 (Wong et al., 2000) conducted by NEC and described in **Section 1.2**, with those from GUESSS 2008, as summarized in **Table 36**. The general level of interest in entrepreneurship has remained consistent, with about 81% of students having at least thought about starting their own business. In terms of more definite entrepreneurial aspirations, the figures have not changed much between the two survey years of 2000 and 2008. Almost half the students surveyed in both years had long term aspirations to start businesses 5 years or more after graduating. The proportion of students with shorter-term aspirations has dropped from 25.9% to 18.4%. This may be partially explained by the larger share of polytechnic students in the 2000 study (69% vs 52% in GUESSS) which tends to bias the figures upwards, especially the figure for short-term entrepreneurial aspiration. The proportion of students who had already founded businesses has also remained consistent at around 2% (1.6% in 2000, 2.1% in 2008).

**Table 35: Comparisons between GUESSS 2008 and NSTB Study 2000**

	<b>2000 NSTB Student Technopreneurship Survey (NUS, NTU, SP, TP, NP, NYP)</b>	<b>2008 GUESSS (NUS, NTU, SMU, SP, TP, NP, NYP, RP)</b>
<b>Profile:</b>	1. Total Responses = 11,660 <ul style="list-style-type: none"> <li>• Univ - 3,612 (31%)</li> <li>• Poly – 8,048 (69%)</li> </ul> 2. Gender Male – 54.2%, Female – 45.8%                     3. Fields of study Business – 23%, Non-Biz – 77%	1. Total Responses = 2,319 <ul style="list-style-type: none"> <li>• Univ – 1,115 (48%)</li> <li>• Poly – 1,204 (52%)</li> </ul> 2. Gender Male – 49.3%, Female – 50.7%                     3. Fields of study Business – 27%, Non-Biz – 73%
<b>Entrepreneurial Intentions / Interest</b>	80.8%	81.4%
<b>Entrepreneurial Aspiration (&lt; 5 years from graduation)*</b>	25.9% <i>(Immediately: 3.3% Within 5 years: 22.6%)</i>	18.4%
<b>Entrepreneurial Aspiration (&gt; 5 years after graduation)*</b>	49.9% <i>(5-10 years: 40.3% &gt; 10 years: 9.6%)</i>	48.4%
<b>Already started a business (includes former &amp; current entrepreneurs)*</b>	1.6%	2.1%

\* The figures for the 2000 NSTB study reported here are computed by assuming no entrepreneurial aspiration among those who indicated little or no interest in starting their own business. The figures here differ from the figures in the 2000 report, which allowed students without entrepreneurial interest to indicate entrepreneurial aspirations.

## **Conclusions and Recommendations**

Overall, the findings from GUESSSS Singapore 2008 indicate that there is strong awareness and interest in entrepreneurship among students in Singapore's tertiary institutions, but the key challenge is to translate this interest into actual entrepreneurial engagement after they graduate. While this challenge is faced by all the countries covered, it appears to be more acute for Singapore, as our survey found that students in Singapore tertiary institutions scored significantly higher than the international average in terms of long-term aspirations, awareness of the importance and availability of entrepreneurship courses, programs and infrastructure, as well as steps taken to explore their interest, but below average in the actual rate of active entrepreneurial involvement while still being students, and only slightly above average in terms of near-term aspiration (within five years of graduation).

The above findings thus suggest that the factors that influence actual student involvement in entrepreneurial activities are complex and go beyond getting the IHLs concerned to put in place entrepreneurship educational courses, promotion programs and supporting infrastructures. Indeed, our survey findings suggest that the IHLs in Singapore appear to have done more than the international average in terms of making available entrepreneurship educational courses, promotion programs, and supporting infrastructures for their students. Despite such above average availability and awareness, the actual rate of IHL student participation in such activities is no different from the international average, and their subsequent translation into actual entrepreneurial actions (while still studying) or near-term intention (within five years of graduation) was lower still.

A number of policy implications can be highlighted based on the above survey findings. Firstly, our findings suggest that our IHLs need to go beyond just providing entrepreneurship educational courses, promotion programs, and supporting infrastructures; they also need to look into the effectiveness of their program designs, as well as the overall academic environmental context within which these programs need to

compete with other demands on students' time and priorities. For example, it will be useful in future surveys to find out why some of the IHL students choose not to participate in such entrepreneurship learning programs despite their intentions and awareness – e.g. is it because they do not have enough time to engage in such activities due to high academic study workload? Or is it because they find these programs not meeting their needs? A more systematic evaluation and benchmarking of IHL entrepreneurship educational programs and how they fit within the overall educational experience of the students may thus be needed going forward. For example, our review of recent research on entrepreneurship education (Lee & Wong, 2006) has suggested that experiential forms of learning of entrepreneurship (e.g. internship in early stage start-ups, engagement in business plan competition, mentoring by experienced entrepreneurs and investors, direct exposure to overseas market through extended overseas stay, etc.) may be more effective than purely classroom-based learning.

Secondly, we need to recognize that there may be factors external to the IHL that hinder the translation of student entrepreneurial interests into actual entrepreneurial pursuits. For example, parental/family and larger societal pressure on new graduates to pursue a less risky career in government or large corporation may vary across societies, while the availability of fast-track corporate jobs that raise the opportunity cost to pursue one's own venturing also may vary across countries. In the context of Singapore, scholarships that entail a bonding period with the scholarship-providing organizations may limit the entrepreneurial options of scholarship holders at least in the immediate years after graduation, while the lack of availability of early-stage funding may constrain the ability of new graduates to start-up new businesses with significant capital requirements. Thus, unless the relevant policy changes external to the IHL are made, the impact of the entrepreneurship programs provided by the IHLs on the rate of actual entrepreneurial involvement of their graduates may be limited.

Thirdly, we also need to recognize that the impact of the IHL entrepreneurship educational programs may not lead to immediate impacts in terms of actual founding of businesses by the students while studying or shortly after graduation. It is possible that



the entrepreneurial learning opportunities provided by the IHLs help plant the seed of long-term entrepreneurial interest among the students, which they will act upon only later in life, after they have acquired the necessary skills/financial reserves and relevant experience/network contacts. This may be the reason why the survey found a significantly larger proportion of students indicating their intentions to start their own businesses beyond the first five years after graduation. To the extent that this is true, it suggests that we need to measure the impact of IHL entrepreneurial learning programs not in terms of short-term behavioral responses, but in terms of long-term mindset change.

Our survey findings on the differences in entrepreneurial propensities among different socio-demographic groups in Singapore also hold a number of relevant policy implications. For example, there is a notable difference between business school/social science students and science and technology students in terms of types of businesses they intend to start – while the former are more oriented towards businesses in the services sector and tend to be less focused on innovation, the latter is more oriented towards manufacturing-related industries and have a higher propensity to focus on innovative products/services. While this difference in preference is understandable given that business students are less likely to discover opportunities arising from technological innovation, it may not be optimal and suggest a possible silo effect in our educational system. It may thus be more desirable if the IHLs can find ways to encourage business students to interact more with science & technology students, including the formation of cross-disciplinary teams in entrepreneurship classes and projects, so that new businesses can be formed that combine the skills of business and technical entrepreneurial students in a complementary manner.

Similarly, polytechnic students indicate a higher propensity to start their own businesses within five years of graduation than university students (despite the male poly-graduates having to undergo two years of NS after graduation), possibly due to their greater practical/hands-on interest and the applications-oriented educational curriculum. Because of their relative youthfulness, entrepreneurial education for polytechnic students should

therefore have a stronger mentoring element by experienced entrepreneurs. It is also desirable for more interactions between such entrepreneurial polytechnic students and their university counterparts, to better synergize the practical/hands-on skills of the former with the more conceptual thinking of the latter.

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**ANNEX A GUESSS 2008 COUNTRY REPRESENTATIVES**

Country	University / Institution	Country representative
Switzerland (SUI)	Swiss Research Institute of Small Business and Entrepreneurship at University of St. Gallen	Prof. Dr. Urs Fueglistaller Prof. Dr. Christoph Müller Dr. Frank Halter
Germany (GER)	Chair for Entrepreneurship at European Business School (ebs)	Prof. Dr. Heinz Klandt
Austria (AUT)	Institut für Unternehmensgründung und Unternehmensentwicklung, Johannes Kepler Universität Linz	Prof. Dr. Norbert Kailer
Liechtenstein (LIE)	Hochschule Liechtenstein	Prof. Dr. Urs Baldegger
France (FRA)	UPR Stratégie et Organisation, EM Lyon	Prof. Dr. Alain Fayoll
Belgium (BEL)	Vlerick Leuven Gent Management School	Prof. Dr. Hans Crijns
Luxembourg (LUX)	Institut Universitaire International Luxembourg	Pol Wagner, Professeur-attaché MESR, Directeur IUIL
Ireland (IRL)	University of Limerick / Department f. Management & Marketing	Dr. Naomi Birdthistle
Norway (NOR)	Department of Strategy and Management, Norwegian School of Economics and Business Administration	Prof. Dr. Johannessen Tor Aase
Finland (FIN)	Lappeenranta University of Technology	Prof. Dr. Asko Miettinen
Hungary (HUN)	University of Pecs, Faculty of Business & Economics	Prof. Dr. Laszlo Szerb
Estonia (EST)	Tallinn University of Technology School of Economics and Business Administration	Prof. Dr. Urve Venesaar
Greece (GRE)	University of Western Macedonia Department of Balkan Studies	Katerina Sarri, Associate Professor
Portugal (POR)	Technical University of Lisbon Instituto Superior Tecnico	João Leitão, PhD in Economics Baptista, Rui; PhD in Business Administration
Australia (AUS)	Murdoch Business School, Murdoch University	Prof. Dr. Brian Gibson
New Zealand (NZL)	University of Otago Department of Marketing and Tourism	Jürgen Gnoth, PhD
South Africa (RSA)	University of Stellenbosch	Dr. Retha Scheepers
Singapore (SIN)	National University of Singapore	Prof. Dr. Wong Poh Kam
Indonesia (IND)	Bakrie School of Management	M. Taufiq Amir
Mexico (MEX)	Tecnologico de Monterrey, Instituto Tecnológico de Estudios Superiores de Monterrey	Elisa Cobas Flores, Ph.D, Bakrie School of Management

### **About Global University Entrepreneurial Spirit Students' Survey (GUESSS)**

Global University Entrepreneurial Spirit Students' Survey (GUESSS) is a biennial international comparative research project that seeks to assess the entrepreneurial intentions and behaviour of students at tertiary institutions. The project aims to understand the profile, vocational goals, founding intentions, and entrepreneurial activities of tertiary students, as well as the entrepreneurship climate in tertiary institutions. GUESSS was initiated in 2004 and coordinated by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen (KMU-HSG) in Switzerland.

The NUS Entrepreneurship Centre was invited to lead and coordinate the 2008 study for all tertiary institutions in Singapore. The GUESSS 2008 study was administered through a common web-based questionnaire. Students of the participating tertiary institutions were provided a link to the national questionnaire via email. A total of 63,527 students from 83 tertiary institutions in 19 countries participated in the 2008 study. In Singapore, a total of 2,319 students from the 3 public universities and 5 polytechnics were surveyed.

### **About NUS Entrepreneurship Centre (NEC)**

One of the three central pillars of NUS Enterprise, NUS Entrepreneurship Centre (NEC) is responsible for NUS Enterprise's drive to provide opportunities for experiential learning of entrepreneurship within the NUS community. NEC's mission is to promote and support entrepreneurial learning within the NUS community, nurture startups by NUS professors, students and alumni, and conduct research to advance knowledge in the policy and practice of technology venturing in Singapore and beyond.

NEC's activities are organised into four key areas: Experiential Education, Entrepreneurship Development, NUS Enterprise Incubator and Entrepreneurship & Innovation Research.



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