



Global University Entrepreneurial Spirit Students' Survey

2011 Singapore Report

Poh-Kam Wong
Yuen-Ping Ho
Pei-Chin Low

August 2012

NUS Entrepreneurship Centre



NUS Enterprise

Co-Funded by:



Acknowledgements

The GUESSS 2011 research project is a cooperative effort between the NUS Entrepreneurship Centre, SMU, NTU, and the five polytechnics. We are particularly grateful for the funding support from the SPRING Singapore that has made this research project possible.

We would also like to thank representatives from Singapore Management University, Nanyang Technological University, Republic Polytechnic, Nanyang Polytechnic, Temasek Polytechnic, Ngee Ann Polytechnic, and Singapore Polytechnic for their institutions' participation in this national study.

*GUESSS 2011 Singapore Research Team
NUS Entrepreneurship Centre*

*Prof. Poh-Kam Wong
Ms. Yuen-Ping Ho
Ms. Pei-Chin Low*

GUESSS 2011 was supported by Ernst & Young as international project partner.



Table of Contents

Executive Summary	1
1 Introduction	8
1.1 Overview of GUESSS 2011	8
1.2 Theoretical framework	8
1.3 GUESSS Data Collection	10
1.4 Country Representatives	10
1.5 Respondent Profile at Global and Singapore	10
2 Entrepreneurial Intentions	16
2.1 Strength of Founding Intentions	16
2.2 Entrepreneurial Aspiration (Entrepreneurship as Career Choice)	20
2.3 Motives of Students	21
3 Entrepreneurship Index	26
4 Environment for Entrepreneurship in Singapore Universities and Polytechnics	30
4.1 Awareness on Entrepreneurship Programs in IHLs	30
4.2 Participation and Demand for Entrepreneurship Offerings from IHLs	33
4.2.1 Demand by Intentional Entrepreneurs, University versus Polytechnic	34
4.2.2 Demand by Intentional Entrepreneurs By Type of Course (Business versus Non-Business)	36
4.3 Satisfaction with IHLs' Entrepreneurship Programs	37
4.4 Perception of Climate in IHLs	40
5 Personal Characteristics and Background	44
5.1 Impression of Entrepreneurship among Singapore IHL Students	44
5.2 Influence of Family Background	45
5.3 Perception of Control	46
5.4 Entrepreneurial Self-Efficacy (Perception of Own Competence)	47
6 Intentional Founders	48
6.1 Steps Already Taken	48
6.2 Industrial Sector	50
6.3 Founding Idea	52
6.4 Founding Resources	53
6.5 Founding Team	57
6.6 Barriers Faced	58
7 Active Entrepreneurs	59
7.1 Characteristics of New Businesses	59
7.2 Industrial Sector	61
7.3 Founding Idea	61
7.4 Founding Resources	62
7.5 Founding Partner	64
7.6 Company Performance	64
7.7 Foundation Process	65
8 Successors	66
8.1 Strength of Succession Intention	66
8.2 Family Firm Orientation	67
8.3 Industrial Sector	67
8.4 Performance of Family Business	68
8.5 Steps Taken to Join Family Business	68
8.6 Barrier to Succession	69

Conclusions	70	
References	73	
ANNEX A	GUESSS 2011 COUNTRY REPRESENTATIVES	74
ANNEX B	COMPARISONS OF SINGAPORE FIGURES REPORTED IN GLOBAL REPORT AND SINGAPORE REPORT	75
ANNEX C	COMPARISONS OF SINGAPORE WEIGHTED AND UN-WEIGHTED FIGURES	77
ANNEX D	CORRELATIONS OF GEM AND GUESSS	81

List of Figures

Figure 1.1: Theoretical Framework of GUESSS 2011	9
Figure 1.2: Age and Gender of Respondents across Countries	11
Figure 1.3: Course of Studies across Countries	12
Figure 1.4: Level of Studies across Countries	13
Figure 1.5: Singapore Respondents by University / Polytechnic	14
Figure 1.6: Singapore Respondents by Education Level	15
Figure 2.1: Strength of Founding Intentions, Singapore versus Global	16
Figure 2.2: Founding Intention across Countries	17
Figure 2.2a: Average Nascent Entrepreneurship Rate 2009-2011 (GEM) and Percentage of Intentional Founders (GUESSS)	18
Figure 2.3: Founding Intentions of Singapore Students	19
Figure 2.4: Vocational Aspirations of IHL Students, Singapore versus Global	21
Figure 2.5: Career Choice Motives, Singapore versus Global	22
Figure 2.6: Career Choice Motives across Entrepreneurial Intentions (Singapore)	24
Figure 2.7: Strength of Being Own Boss Motive across Countries	25
Figure 3.1: Entrepreneurship Index for Business Students across Countries	26
Figure 3.2: Entrepreneurship Index for Natural Science Students across Countries	27
Figure 3.3: Entrepreneurship Index for Social Science Students across Countries	28
Figure 3.4: Entrepreneurship Index for Singapore IHLs Students	29
Figure 4.1: Awareness of IHL Entrepreneurship Programs , Singapore versus Global	30
Figure 4.2: Awareness of IHL Entrepreneurship Programs by Country	31
Figure 4.3: Students' Satisfaction with IHL Entrepreneurship Programs, Singapore versus Global	37
Figure 4.4: Students' Satisfaction with IHL Entrepreneurship Programs by Country	38
Figure 4.5: Perceptions of Offerings in Singapore University/Polytechnics versus Global	40
Figure 4.6: Perceptions of Climate for Entrepreneurship in IHLs: Global Comparisons across Countries	41
Figure 4.7: Perceptions of Climate for Entrepreneurship in Singapore IHLs	42
Figure 4.8: Evaluation of IHLs' Overall Climate for Fostering Entrepreneurship (Global Comparisons)	43
Figure 5.1: Implied Impression on Entrepreneurship	44
Figure 6.1: Founding Steps Already Taken, Singapore versus Global	48
Figure 6.2: Founding Steps Already Taken by Level of Study	49
Figure 6.3: Intended Industrial Sector of New Venture (Business versus Non-Business)	50
Figure 6.4: Intended Industrial Sector of New Venture (by Level of Study)	51
Figure 6.5: Source of founding idea in Singapore (by Level of Study)	52
Figure 6.6: Resources from Parents/Family (by Level of Study)	53
Figure 6.7: Resources from Parents/Family (by Parents' Entrepreneurship background)	54
Figure 6.8: Sources of Finance (Estimated Share in Total Funding)	55

Figure 6.9: Average Weekly Working Time to be invested in the New Venture	56
Figure 6.10: Average Number of Intended Founding Partners by Country	57
Figure 6.11: Recruitment Source of Intended Founding Partners	57
Figure 6.12: Barriers to Founding, Singapore versus Global Average	58
Figure 7.1: Intended Growth Factors of Existing Ventures across Country	60
Figure 7.2: Industrial Sector of Active Student Ventures	61
Figure 7.3: Source of Founding Idea	61
Figure 7.4: Resources from Parents/Family	62
Figure 7.5: Sources of Finance (Estimated Share in Total Funding)	63
Figure 7.6: Recruitment Source for Founding Partners	64
Figure 7.7: Company Performance Compared to Competitors since Establishment	64
Figure 7.8 Foundation Process of New Business	65
Figure 8.1: Strength of Succession Intention	66
Figure 8.2: Family Firm Orientation	67
Figure 8.3: Industrial Sector of Family Firm	67
Figure 8.4: Performance of Family Firms Compared to Competitors over Last Three Years	68
Figure 8.5: Steps Taken for Joining Family's Firm	68
Figure 8.6: Barrier to Succession	69

List of Tables

Table 1.1: GUESSS 2011 Participating Countries	9
Table 4.1: Awareness of Entrepreneurship Offerings at IHLs (All students and Intentional Entrepreneurs)	32
Table 4.2: Demand for Entrepreneurship Programs, Singapore versus Global	33
Table 4.3: Demand for Entrepreneurship Programs by Intentional Entrepreneurs, University versus Polytechnic	35
Table 4.4: Demand for Entrepreneurship Programs by Intentional Entrepreneurs, Business versus Non-Business	36
Table 4.5: Students' Satisfaction with IHL Entrepreneurship Programs in Singapore (University versus Polytechnic)	39
Table 5.1: Importance of Opinion and Reaction to Entrepreneurship Aspiration of Singapore IHL Students (by Interest in Entrepreneurship)	45
Table 5.2: Importance of Opinion and Reaction to Entrepreneurship Aspiration of Singapore IHL Students (by Parents' Entrepreneurship Background)	46
Table 5.3: Character of Founding Intention	46
Table 5.4: Competence by Founding Intention	47
Table 5.5: Competence of Intentional Founders by Type of Course and Level of Study	47
Table 7.1: Characteristics of Students' New Ventures	59

Executive Summary

Background

Global University Entrepreneurial Spirit Students' Survey (GUESSS) is a biennial research focusing on entrepreneurial attitudes, intentions, and activities of students at institutes of higher learning (IHLs). GUESSS was initiated in 2003 by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St.Gallen in Switzerland.

The NUS Entrepreneurship Centre (NEC) was invited to lead and coordinate the 2011 study for all tertiary institutions in Singapore. NEC also coordinated Singapore's participation in GUESSS 2008. GUESSS 2011 was administered through a common web-based questionnaire in mid-2011. Students from the participating tertiary institutions were provided a link to the national questionnaire through email. A total of 93,265 students from 489 institutions in 26 countries participated in the 2011 study. In Singapore, a total of 3,133 students from the 3 public universities and 5 polytechnics were successfully surveyed throughout the whole data collection period.

The overall findings of 26 countries reported in the global GUESSS 2011 were released in September 2011 on the official GUESSS website at <http://www.guesssurvey.org/>. This Singapore report presents the detailed findings for Singapore and provides comparison to the other participating countries.

Key GUESSS 2011 Singapore Findings

Singapore IHLs students expressed a healthy level of interest in entrepreneurship, with 38% of them have given serious thought to starting their own business. This entrepreneurial intention is slightly lower than the global average of 42%. 14.3% of Singapore IHL students aspire to be entrepreneurs, either founding their own business or taking over an existing business, immediately after their studies. This proportion is comparable to the global average. A higher percentage, 41% of Singapore students, has entrepreneurial aspirations in the longer term of 5-year after completing their studies. This proportion is slightly lower than the global average of 43.3%. In Singapore, only 1% of students are currently active in their own companies, lower than the global average of 2.5%. The different levels of entrepreneurship intention and aspiration among Singapore tertiary students are depicted in the table below.

Levels of Entrepreneurship Intention and Aspiration among Singapore Tertiary Students

	Singapore*	Global Average
Strong Entrepreneurial Intention (have at least given repeated serious thought to founding own business)	37.5%	42.0%
Active Entrepreneur (currently active in a self-founded firm)	1.1%	2.5%
Short Term Entrepreneurial Aspiration (to be founder or successor right after studies)	14.3%	14.9%
Long Term Entrepreneurial Aspiration (to be founder or successor 5 years after studies)	40.8%	43.3%

*Individual cases have been weighted to better reflect the actual proportions of polytechnics and university students in Singapore which stand at approximately 53% polytechnics students and 47% university students. Throughout this report, weighted figures are reported where appropriate.

- **Entrepreneurial Intentions**

- *Strength of Founding Intentions*

The strength of founding intention provides an indication of students' level of interest in entrepreneurship. Those who have at least repeatedly given serious thought to becoming entrepreneurs are categorized as "Intentional Founders". Globally, more than 40% of students are intentional founders, while 2.5% are currently active entrepreneurs. In Singapore, the proportions are lower, with 38% of students having seriously thought about becoming entrepreneurs and only 1% of them having already founded their own companies.

In Singapore, a significantly higher proportion of students in business schools (51.5%) than non-business schools (35.1%) have expressed serious interest in setting up their own businesses. The business schools (1.9%) also have more active founders than other faculties / schools (1.0%).

Graduate students (49.3%) reported greater interest in entrepreneurship than undergraduates (34.0%) and diploma students (39.0%). However, there were more undergraduates (1.5%) who have already founded their own businesses and are active in self-founded companies compared to graduates (0.7%) and polytechnic students (0.8%).

- *Entrepreneurial Aspiration (Entrepreneurship as Career Choice)*

14% of students in Singapore IHLs aspire to be involved in entrepreneurial activities, either founding own business or taking over an existing business, immediately after completing their studies. This proportion is comparable to the global average. A higher percentage, 41% of Singapore students, has entrepreneurial aspirations in the longer term, 5 years after completing their studies. This proportion is slightly lower than the global average of 43.3%.

- *Motives of Students*

The motive of being one's own boss is a significant driver of entrepreneurial career aspirations. Students who aspire to be self-employed (aspiring founders) are more strongly motivated to be their own boss (5.54 on a scale of 1 to 7) compared to those who aspire to be salaried employees (aspiring employees, mean rating of 4.94). Those who aspire to succeed to an existing business (aspiring successors) are also strongly motivated to be their own boss (mean rating of 5.43).

- **Entrepreneurship Index**

The Entrepreneurship Index quantifies the entrepreneurial power of students across countries. The index is calculated based on combining the students' founding intentions with the steps taken to found a company. The entrepreneurial index among business, natural science and social science students from Singapore is 13.4 (compared to global average of 12.8), 13.5 (compared to 12.6) and 14.1 (compared to 11.4), respectively. In all cases, the Singapore's Entrepreneurship Index values are higher than the global average. While Singapore's entrepreneurship intention rate is lower than the global average, students in Singapore IHLs have taken more advanced steps to actualize their intentions compared to the majority of students in the other GUESSS participating countries.

- **Environment for Entrepreneurship in Singapore Universities and Polytechnics**

- *Awareness on Entrepreneurship Programs in IHLs*

Singapore students reported relatively higher awareness on the various programs offered by their IHLs compared to the global average. 52% of Singapore students are aware that some form of entrepreneurship programs are offered at their IHL, significantly higher than the global average of 36%.

Across the board, intentional entrepreneurs reported higher awareness of various entrepreneurial programs offered by IHLs, in comparison to those who are not interested to become entrepreneurs. Intentional founders from universities expressed higher awareness on entrepreneurship programs compared to their polytechnic counterparts.

- *Participation and Demand for Entrepreneurship Offerings from IHLs*

The demand for a IHL entrepreneurship program is defined as the sum of participation in a program and the expressed desire for such a program to be offered. The demand for most of the entrepreneurial programs is significantly higher at the global level compared to those in Singapore.

Generally, we observe that slightly less than 2/3 of the Singapore students participated in various entrepreneurial programs. There is, however, quite high demand from those who are not aware of the programs but would like to have them, especially for networking and coaching offerings. There is also emerging demand for two relatively newer areas: family firms and social entrepreneurship.

- *Demand by Intentional Entrepreneurs, University versus Polytechnic*

Lectures and seminars about family firms attracted relatively lower awareness and participation among the intentional entrepreneurs; incidentally, they are among the most desired programs to be made available. Among intentional entrepreneurs, postgraduate students reported significantly higher participation in technology entrepreneurship programs (51.5%) compared to undergraduates (30.8%) and polytechnic students (20.6%). While participation in technology entrepreneurship courses is low among the polytechnic students, this appears to be mainly caused by lack of awareness (32.2% of them are not aware of technology entrepreneurship courses being offered but would like to have such courses).

A higher share of polytechnic intentional entrepreneurs has participated or would like to participate in business plan competitions, compared to university entrepreneurs. This suggests that business plan competitions can be an especially useful avenue for imparting relevant skills and resources to aspiring entrepreneurs at this level. Polytechnic students also have higher demand for networking opportunities with experienced entrepreneurs and for mentoring programs, showing that access to experienced entrepreneurs is a priority.

- *Demand by Intentional Entrepreneurs By Type of Course (Business versus Non-Business)*

Intentional entrepreneurs from non-business schools expressed a higher demand for general entrepreneurship programs (19.7% compared to 14.5% from business school), business planning (23.0%, compared to 31.9%) and business plan competitions (17.9% compared to 28.6%) compared to those from business schools.

○ *Satisfaction with IHLs' Entrepreneurship Programs*

Overall satisfaction for Singapore IHLs' entrepreneurship programs was 3.65 measured on a scale of 1 to 5, at par with the global average of 3.68. Intentional entrepreneurs who are university students reported higher satisfaction from their participation of various entrepreneurship programs compared to their polytechnic counterparts.

○ *Perception of Entrepreneurship Climate in IHLs*

Singapore IHLs are perceived to provide programs that are helpful in equipping students with knowledge about entrepreneurship and skills to become an entrepreneur.

In Singapore, 42.7% of students agree that IHLs provide a favorable climate for them become entrepreneurs, higher than the global average of 36%. On the other hand, only 38.3% of them believe that they have many entrepreneurial-minded classmates. This is slightly lower than the global average of 40.2%.

● **Personal Characteristics and Background**

○ *Impression of Entrepreneurship among Singapore IHL Students*

In all areas, intentional founders and active founders reported significantly favourable impressions of entrepreneurship compared to non-founders.

○ *Influence of Family Background*

Generally, Singapore IHL students placed significantly greater importance on the opinion of their parents or family members compared to the opinion from their friends or fellow students. Those who are currently active entrepreneurs generally received the most positive reaction from the people close to them. Students who are intentional founders receive significantly stronger positive reactions compared to those who have no intention to become entrepreneurs. Students whose parents have entrepreneurial experience in the past received significantly more positive reaction compared to those whose parents have no entrepreneurial experience.

○ *Perception of Control*

Singapore IHL students with strongest entrepreneurial interest show stronger confidence in their own ability to control their own decisions and direction. In addition, they are less likely to submit to the control by others.

○ *Entrepreneurial Self-Efficacy (Perception of Own Competence)*

In Singapore, the entrepreneurially-oriented students displayed significantly greater belief in their own competence in various areas. The perception of own competence is especially strong among the active founders where they rated their competence across all areas above 5 on the 7-point scale.

Comparing the intentional founders from business and non-business schools, business students rated their competence in financial analysis and responsibility for ideas and decisions significantly higher than non-business students.

- **Intentional Founders**

- *Steps Already Taken*

More than half of the Singapore intentional founders have thought of their first business ideas. This is lower than the global average of 64.7%. However, entrepreneurially oriented students in Singapore IHLs have taken more advanced, concrete steps to realize their entrepreneurial intentions compared to students in other countries. 3.9% of Singapore intentional entrepreneurs have approached potential funding sources (compared to the global average of 3%) and 10.2% have developed a product (compared to 9.5%).

Slightly less than two-third of the intentional entrepreneurs who are doing their undergraduate and post-graduate studies have already thought of their first business ideas. In contrast, less than half of those in polytechnic had done so.

- *Industrial Sector*

The intentional founders from non-business school have higher propensity to start their new business in ICT (10.6% for non-business students compared to 3.8% for business students) and architecture / engineering sectors (10.3% for non-business students compared to 0.4% for business students) compared to business students.

The intentional founders in graduate study are mainly interested in the hospitality sector while undergraduates and polytechnic students prefer wholesale / retail trade for their new ventures. Furthermore, the graduate students reported higher propensity to start businesses in consultancy, ICT, manufacturing and health services sectors compared to undergraduates and polytechnic students.

- *Founding Idea*

Almost one-third of the intentional founders attributed their studies as a source of their founding idea. The proportion is especially high for polytechnic students where 34.8% indicated that their business ideas came from their polytechnic studies. Among university graduates / postgraduates, the research conducted at IHLs provided the business ideas for almost one-third of the intentional founders.

- *Founding Resources*

Across all the various sources of resource support, polytechnic students are most dependent on their family members. Relative to other students, the graduates / post-graduates from university are the most independent with the lowest level of resource support by their parents / family. Among the intentional founders, those with parents who are currently active entrepreneurs are most reliant on their parents for a variety of support.

- *Founding Team*

Compared to other countries, Singapore students are more likely to found a business in a team rather than as a sole entrepreneur, with an average of 1.4 founding partners. The founding partners will be recruited both from the circle of friends outside the IHLs (64.7%) and within the IHLs (57.7%).

○ *Barriers Faced*

The intentional founders from Singapore reported financial-related factors (mean of 5.3 on a 7-point scale for access to financial capital and 5.0 for financial risk) as their most significant barriers to founding a company. They were also concerned about the lack of contact to customers and the lack of relevant technical know-how.

● **Active Entrepreneurs**

○ *Characteristics of New Businesses*

In Singapore, a small proportion, 1% (n=32) of the university / polytechnic students indicated that they are currently active in their own business. Globally, IHL students founded their new venture with approximately two other partners and hold the majority of the ownership of their business (68.7% of equity capital on average). However, Singapore active founders have more than 2 partners on average and hold only 52.1% of the equity capital in the venture.

The new businesses founded by Singapore students' have an average of almost 3 employees today. The students plan to expand employment to an average of 33 employees in 5 years' time; growing their business by a factor of 11.76. This is far higher than the global average of 4.23 and places Singapore at top of the chart in terms of self-reported growth factor across 26 countries. The extremely high expected growth reported by Singapore's active student entrepreneurs reflects optimism and ambitious aspirations. However, high expectations may not always translate into actual performance as many external factors influence the growth of early-stage ventures.

○ *Industrial Sector*

Among the active entrepreneurs from Singapore, the top two sectors of choice are wholesale / retail trade (34.4%) and ICT (21.9%).

○ *Founding Idea*

25% of the active founders credited their IHLs studies as a source of founding ideas, while only 6.3% of them indicated that their research at IHLs provided the business ideas.

○ *Founding Resources*

The active entrepreneurs from universities are relatively less dependent on their parents / family across various areas compared to entrepreneurs from polytechnics.

Globally, an average 1.9% of the funds are equity capital from institutional investors. This is significantly lower than Singapore where 10.8% of the funds are from institutional investors. In addition, winnings from business competitions or idea contests made up only 1.5% of the funds at global level. In contrast, they are accounted for 8.2% of the funds in Singapore. These findings point to the developed systems and infrastructures for entrepreneurship support in Singapore's IHLs, relative to many other countries in the world.

○ *Company Performance*

Firms founded by students in Singapore IHLs performed slightly better than the global average in terms of market share (4.28 in Singapore on a 7 point scale, compared to 4.11). Singapore firms are also significantly better in jobs creation (4.23) compared to the global average (3.38).

○ *Foundation Process*

University entrepreneurs are relatively more adaptive and flexible to allow the business to evolve (6.27 on a 7-point scale compared to 5.29 for polytechnic entrepreneurs), allocate resources (6.00 compared to 5.41), act on new opportunities (6.07 compared to 5.29), and decide on courses of action (6.27 compared to 5.29) compared to polytechnic entrepreneurs.

● **Successors**

○ *Strength of Succession Intention*

26.1% (n=213) of the Singapore students who have family business background are intentional successors who have at least repeatedly thought about taking over their parents' business, while only 0.5% (n=4) of them are currently active in their parents' business.

○ *Steps Taken to Join Family Business*

More than one-third of the students have had first general talks with their family members while 38.5% of them have started to work in their family firms as either apprentices or part-time staff.

○ *Barrier to Succession*

The students found that the top two barriers of becoming a successor in family business are technical knowledge (4.81) and skills / capabilities (4.77). To them, working daily with their parents or family members (4.09) is the least serious barrier.

Conclusions

- There is a relatively healthy level of interest in entrepreneurship among students in Singapore IHLs; however the level of engagement varies. It may benefit IHLs to focus on students who have expressed definite interest to found their own firms, and who may require assistance in realizing their entrepreneurship intentions.
- The value of entrepreneurship offerings should be gauged from a long-term perspective as the offerings do not yield immediate results as the substantive impact is only apparent after the passing of several years despite the slate of support and promotion programs by IHLs. Students' entrepreneurial interest is shaped by a variety of factors and cultural perspectives / mindsets which cannot be easily changed in the short term.
- There are generally high levels of awareness and participation in entrepreneurship programs offered by Singapore IHLs. However, gaps exist as a sizeable proportion of interested student entrepreneurs are not aware of the full range of entrepreneurship programs offered at IHLs. Additionally, some intentional entrepreneurs do not participate in the entrepreneurship programs although they are aware of the programs.
- There are notable differences observed among students at varying levels of study (polytechnic / university undergraduates / postgraduates) and business schools versus non-business schools. These extend to the type of program participation and demand, as well as differences in the degree of preparedness to be entrepreneurs and differences in the levels of entrepreneurial skills and competencies.

1 INTRODUCTION

1.1 Overview of GUESSS 2011

The worldwide research project Global University Entrepreneurial Spirit Students' Survey (GUESSS) was initiated by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St.Gallen in 2003. Formerly known as International Survey on Collegiate Entrepreneurship (ISCE), GUESSS is a biennial research focuses on entrepreneurial attitudes, intentions, and activities of students at institutes of higher learning (IHLs).

The main objectives of GUESSS are:

- 1) The start-up process: To systematically report the founding intention and activity 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, founding climate and infrastructure by the IHLs.
- 3) The individual: To make temporal and geographical comparison of individual-based characteristics which impact the founding intention and activity of students.

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

This report presents the comparative findings of the tertiary students' entrepreneurial attitudes, intentions, and activities across the 26 countries that participated in GUESSS 2011 (**Table 1.1**). The comparisons by country should be interpreted cautiously as the number of participated universities from every country ranges widely; from one university from Liechtenstein to 56 universities from Netherlands. In addition, the response rates vary widely from 1.5% for United Kingdom to 37.9% for Liechtenstein. In Singapore, the number of actual entrepreneurs is relatively small; hence, the findings should be read carefully.

For GUESSS 2011, a significantly improved questionnaire resulted from the new project management in the project core team; thus, the practical and scientific impact of GUESSS are strengthened. Consequently, direct and immediate comparisons between the findings from the 2011 survey and past years' results are almost impossible.

1.2 Theoretical framework

The theoretical foundation of GUESSS is the Theory of Planned Behavior (Ajzen, 2002; Fishbein & Ajzen, 1975) (**Figure 1.1**). According to the theory, the intention to exhibit a specific kind of behavior is influenced by a number of factors, such as attitude toward the behavior, subjective norms, and perceived behavioral control. In the context of GUESSS, we investigate entrepreneurial intentions of University students, for example, the intention to found a company, to take over an existing one, or to join the parents' family firm. An important boundary condition here is the University context, which we investigate with specific attention. In addition, we also investigate personal background, motives, and family background as antecedents.

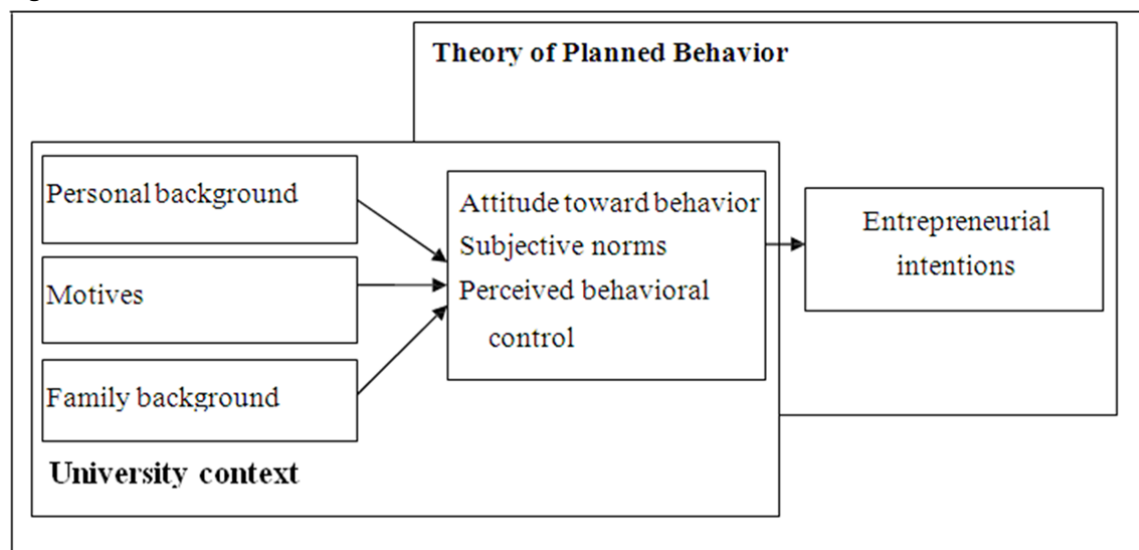
Table 1.1: GUESSS 2011 Participating Countries

No	Country	Number of Participated Universities	Number of Targeted Students	Number of Completed Questionnaires	Response Rate (%)
1	Argentina	23	-	1,660	-
2	Austria	17	144,700	4,553	3.1
3	Belgium	11	-	188	-
4	Brazil	43	250,000	29,186	11.7
5	Chile	5	15,544	1,244	8.0
6	China	22	26,950	868	3.2
7	Estonia	21	34,070	1,874	5.5
8	Finland	12	29,313	1,437	4.9
9	France	17	15,930	1,498	9.4
10	Germany	46	297,373	12,469	4.2
11	Greece	7	14,000	454	3.2
12	Hungary	23	70,717	5,677	8.0
13	Ireland	8	9,705	332	3.4
14	Japan	4	4,200	561	13.4
15	Liechtenstein	1	580	220	37.9
16	Luxembourg	2	4,948	444	9.0
17	Mexico	3	2,400	556	23.2
18	Netherlands	56	227,568	13,121	5.8
19	Pakistan	12	-	321	-
20	Portugal	14	-	1,020	-
21	Romania	33	-	849	-
22	Russia	23	7,840	2,882	36.8
23	Singapore	8	66,000	2,391 (3,133)*	3.6 (4.7)*
24	South Africa	15	16,670	697	4.2
25	Switzerland	44	92,738	8,115	8.8
26	United Kingdom	19	43,432	648	1.5
	Total	489	1,374,678	93,265	6.3

Figures in the table are as reported in the global report.

*Singapore figures in () are based on the full dataset of 3133 responses.

Figure 1.1: Theoretical Framework of GUESSS 2011



1.3 GUESSS Data Collection

GUESSS is administered through a common web-based questionnaire. Every participating country is represented by one representative, who coordinates the data collection at different universities in the country. Upon completion of data collection, all data are processed by the core team in Switzerland. The individual country datasets were then disseminated to the country representatives of each country. As at the cut-off date for responses to be included in the consolidated global report, a total of 93,265 students from 489 IHLs in 26 countries participated in the 2011 study.

At the time of the global report deadline in July 2011, Singapore has accumulated 2,391 responses and these were submitted to the global project lead. As some of the Singapore IHLs required more time to complete the survey and to achieve a substantial number of responses, data collection in Singapore was extended for another few months. At the end of the data collection in September, Singapore achieved 3,133 responses from the 3 public universities and 5 polytechnics. The Singapore report was written based on the full dataset of 3,133. As a result, the figures for Singapore reported in this GUESSS Singapore report are slightly different from those reported in the global report. **Annex B** compares key indicators in the Global report (based on 2,391 responses from Singapore IHL students) with those in this GUESSS Singapore report (3,133 responses).

1.4 Country Representatives

The GUESSS 2011 study for Singapore was conducted by the following team members at the NUS Entrepreneurship Centre (NEC), National University of Singapore:

Professor WONG Poh Kam (Director, NEC and Professor, NUS Business School)
Ms HO Yuen Ping (Senior Research Manager)
Ms LOW Pei Chin (Assistant Manager)

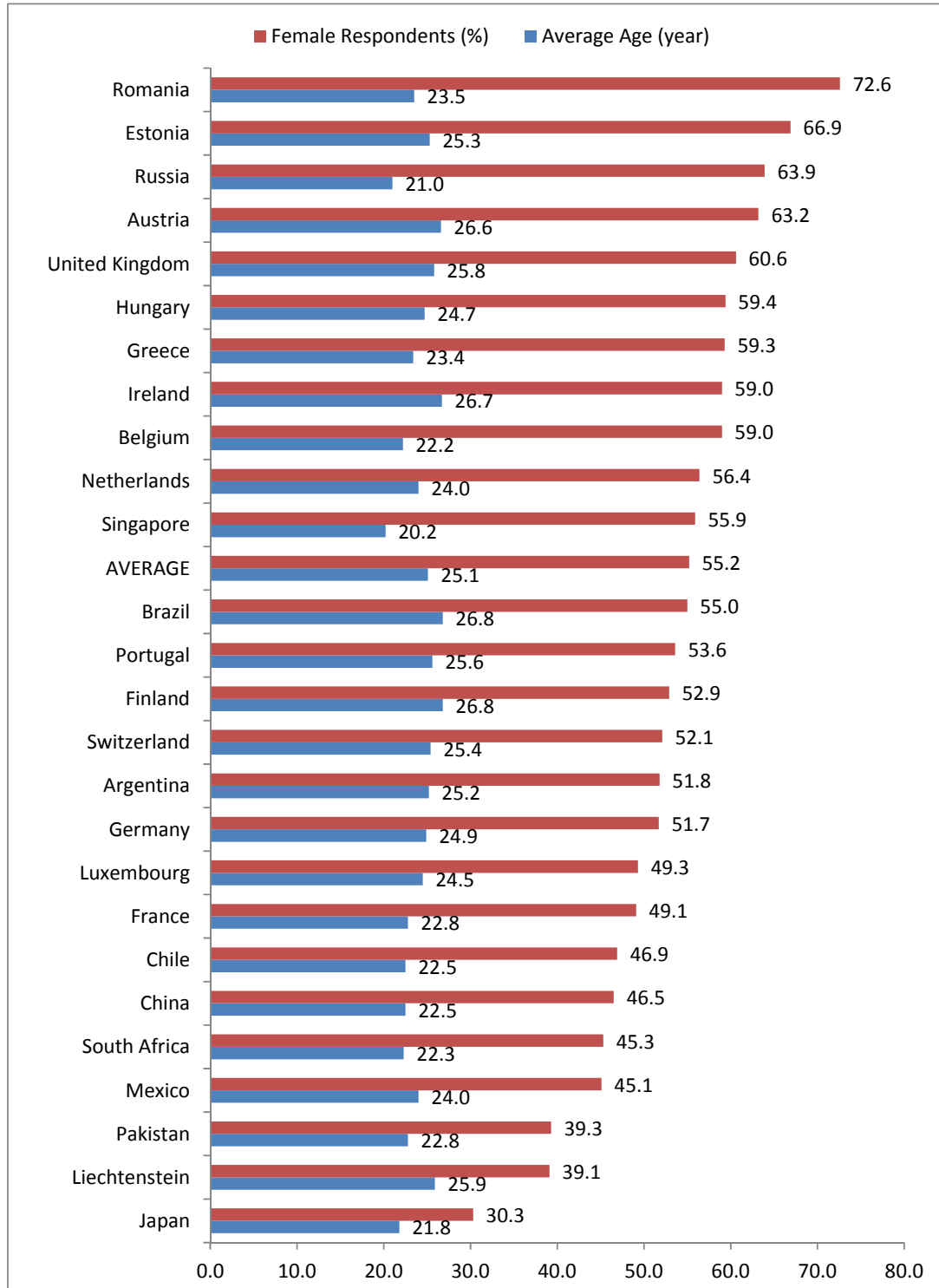
Please refer to **Annex A** for the list of country representatives of GUESSS 2011.

1.5 Respondent Profile at Global and Singapore

Globally, the average age of students ranges between approximately 20 and 27 years, with an average of 25 years (**Figure 1.2**). This is most likely contributed by either over- or underrepresentation of undergraduate and graduate students or by differences among the education systems across of countries. We also found differences of gender proportions between countries, but a reasonable average of 55.2% of females globally.

In Singapore, the average age of students is about 20 years. This is likely due to a larger percentage of polytechnic students (66.5%) that have participated in the study, as explained in **Figure 1.6** below. 55.9% of the responses were from female students, which is comparable to the global average.

Figure 1.2: Age and Gender of Respondents across Countries

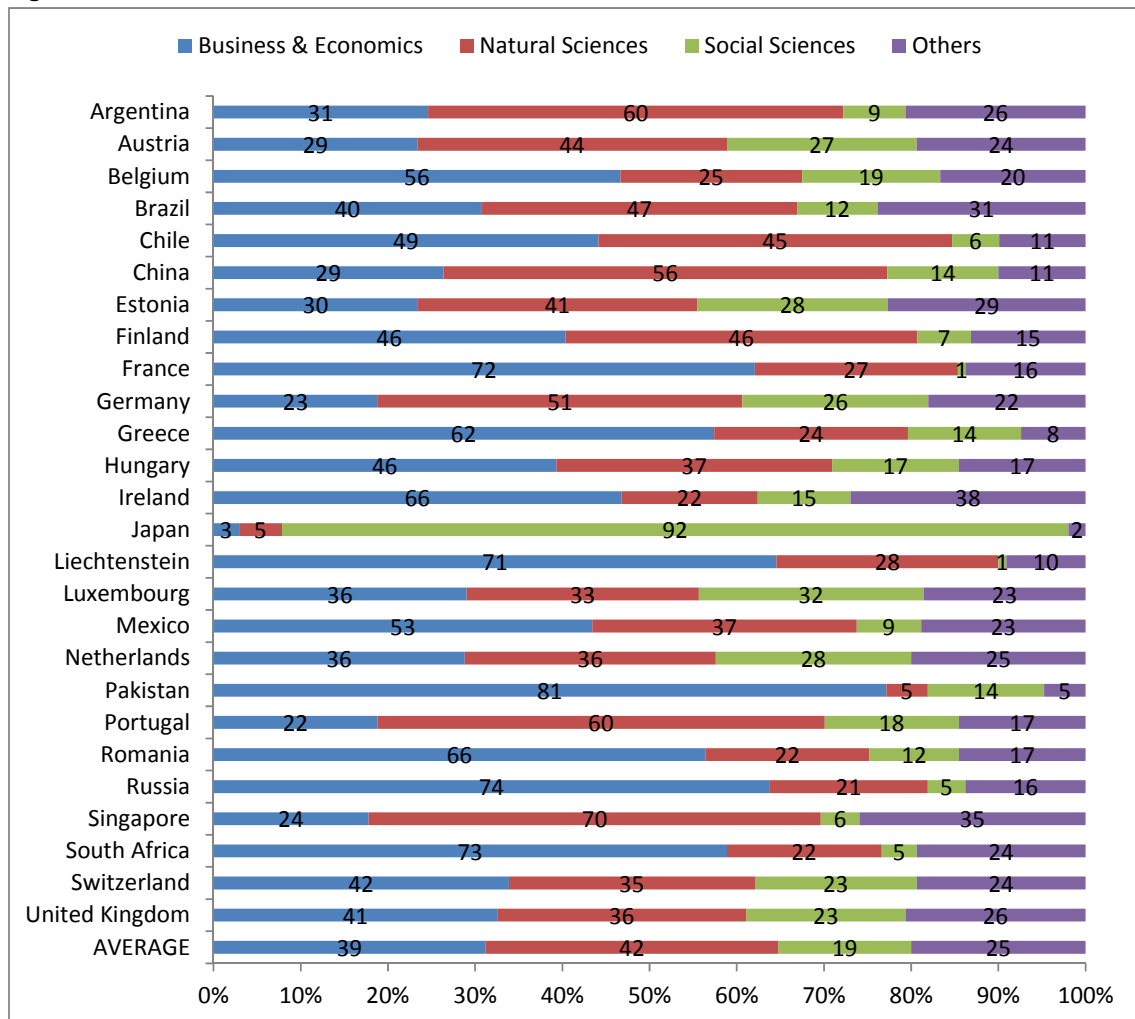


In terms of course of studies, **Figure 1.3** shows a high variation across countries. Business and economics students dominate in countries such as Russia, South Africa, Pakistan and France, but natural science students are strongly represented in Argentina, Portugal and Singapore. In Japan, more than 90% of the responses are from social science students.

For the purpose of comparison with other countries, we grouped the Singapore economics students together with business students in **Figure 1.3**, as reported in global report.

For Singapore, the interest is mainly on comparing students from business and non-business schools; hence, almost all of the comparisons in this report were done on these two groups of students, unless otherwise stated. In Singapore, the responses from business school contributed 14.9% of the total sample while non-business school contributed 85.1%.

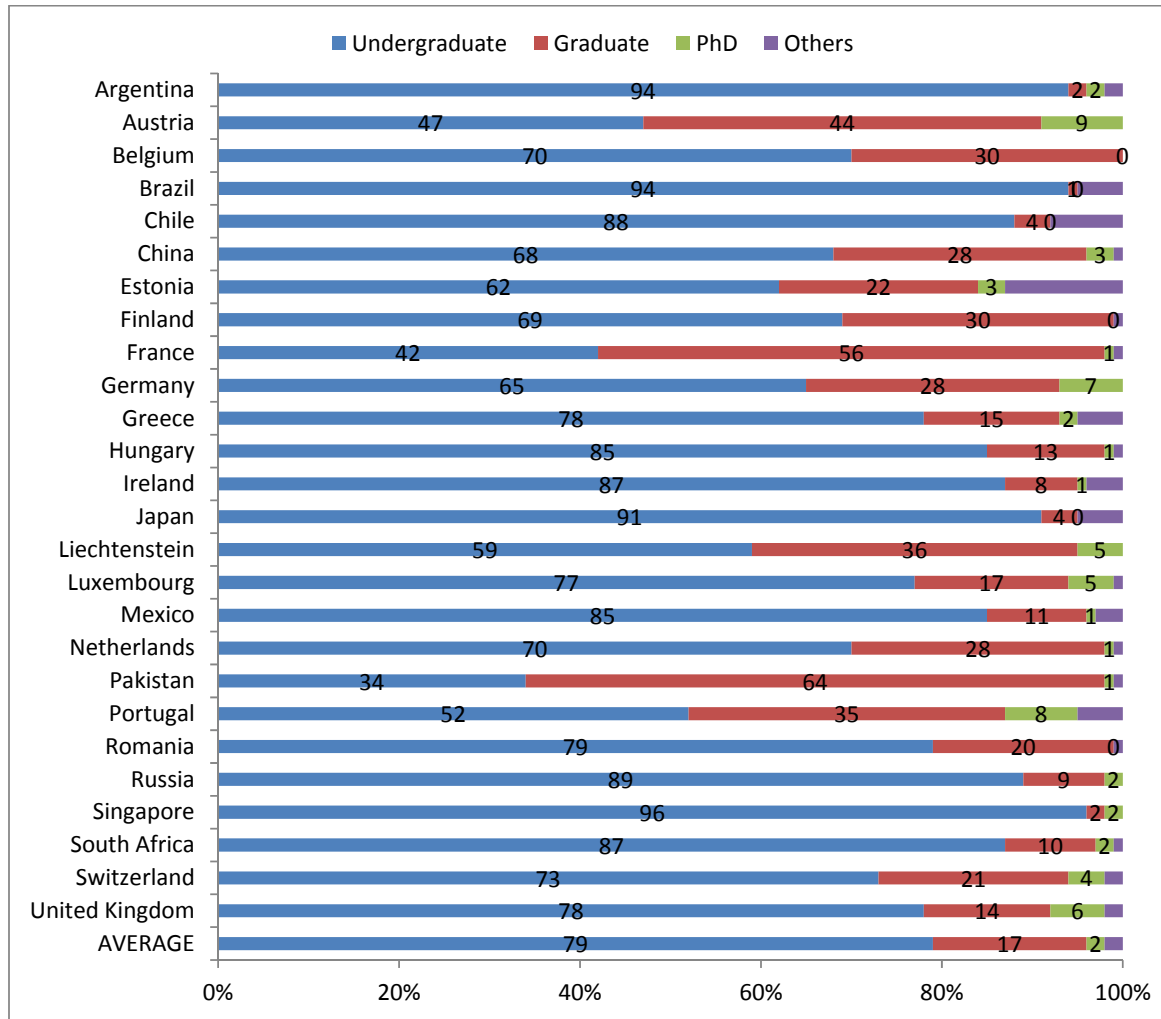
Figure 1.3: Course of Studies across Countries



Note: **Business & economics** study includes management / business administration, economics.
Natural sciences study includes medicine / health sciences, mathematics / natural sciences, engineering, architecture, computer sciences, etc.
Social sciences study includes linguistics, cultural studies, religion, philosophy, psychology, education / pedagogy, sociology, etc.
Others include sports, art, etc.

In Singapore, undergraduate students consist of both the university undergraduates (29.0%) and polytechnic diploma students (66.5%). For Singapore, Brazil and Argentina, the responses from undergraduate students exceed 90% (Figure 1.4). In contrast, the responses from graduate students in Pakistan, France and Austria form more than 40% of the national samples. Globally, more than three quarters of responses on average are from undergraduate students while 17% of them are from graduates.

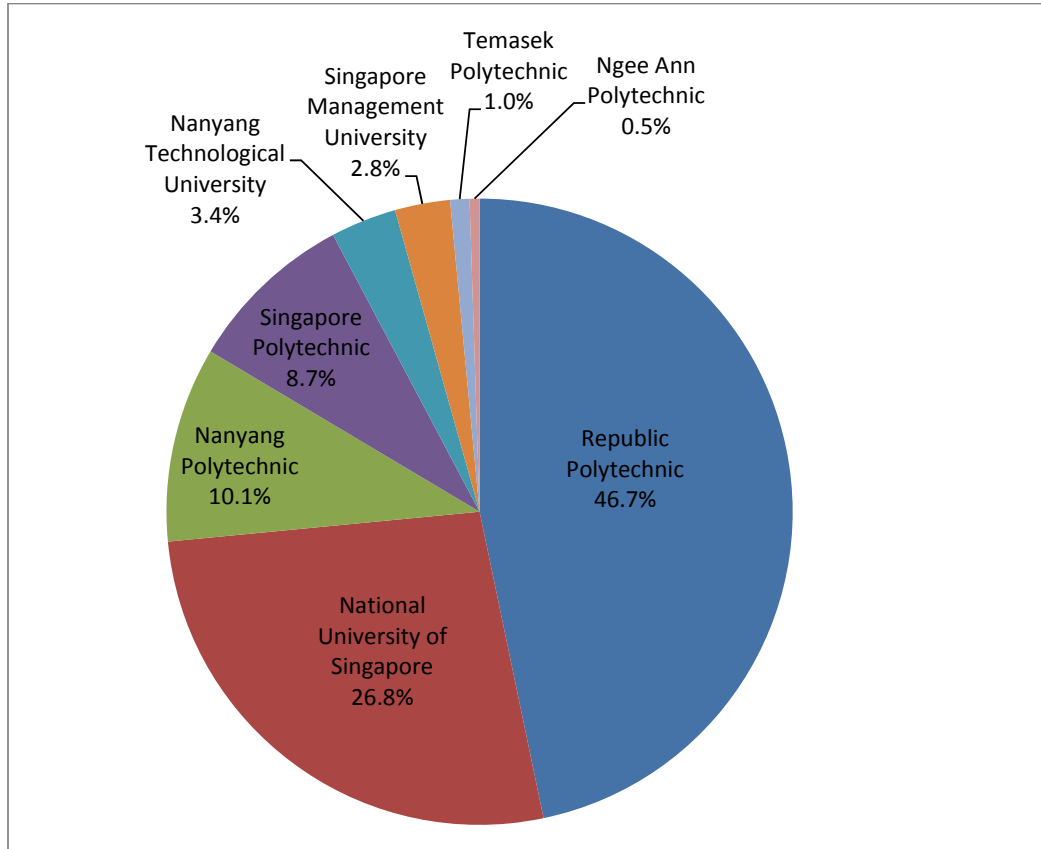
Figure 1.4: Level of Studies across Countries



* To increase readability, Postdocs and MBA students have been merged with “others” group, and concrete numbers are not reported in the figure.

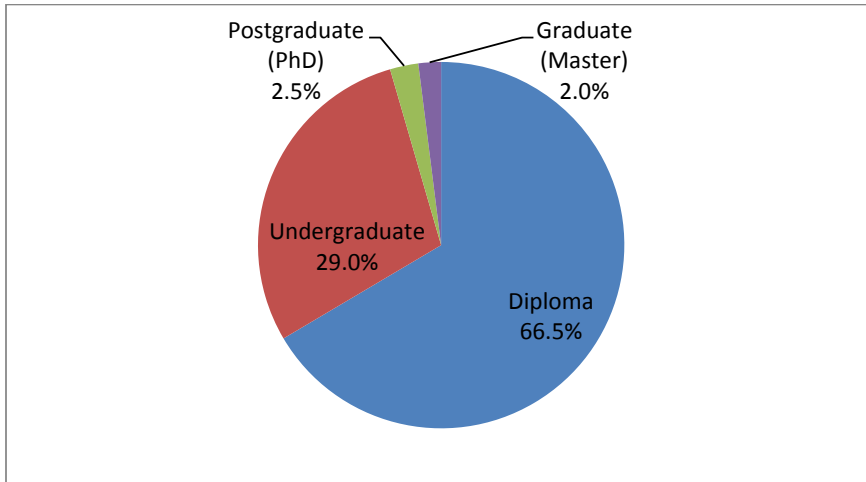
In Singapore, the 3 public universities (NUS, NTU and SMU) and 5 polytechnics participated in GUESSS 2011 (**Figure 1.5**). The larger proportions of respondents were from Republic Polytechnic (46.7%), National University of Singapore (26.8%) and Nanyang Polytechnic (10.1%).

Figure 1.5: Singapore Respondents by University / Polytechnic



A total of 3,133 students from Singapore IHLs, 3 public universities and 5 polytechnics, responded to the 2011 GUESSS survey. The larger proportion of respondents from Singapore IHLs was diploma students from polytechnics (66.5%) and the remaining 33.5% were undergraduates / PhD / Master students from universities (**Figure 1.6**).

Figure 1.6: Singapore Respondents by Education Level



In the actual population of students studying in Singapore IHLs, 53% are polytechnics students and 47% are university students (Source: Singapore Yearbook of Statistics, based on total enrollment figures in the 3 public universities and 5 polytechnics in 2009). To better reflect the actual proportional division of IHLs students between those in the universities and those in the polytechnics, **the figures for Singapore in this report are weighted**. The comparisons between the un-weighted and weighted figures showed that although there are some small differences, the differences are not so significant as to change the thrust of our findings. Please refer to **Annex C** for a comparison of weighted and un-weighted figures. Throughout this report, weighted figures for Singapore are used.

2 ENTREPRENEURIAL INTENTIONS

The entrepreneurial intention of students is examined from two perspectives: founding intentions and entrepreneurial aspiration.

2.1 Strength of Founding Intentions

The strength of founding intention provides an indication of students' level of interest in entrepreneurship. The students were asked if and to what extent they have already been thinking about founding their own company. Those who have given serious thought to becoming entrepreneurs (defined as at least repeatedly considering the possibility) are categorized as "Intentional Founders" (Figure 2.1).

Globally, more than 40% of students are intentional founders who have intensively thought about founding their own company, while 2.5% are currently active entrepreneurs (Figure 2.1). In Singapore, the proportions are lower, with 37.5% of students having seriously thought about becoming entrepreneurs and only 1.1% of them having already founded their own companies.

Figure 2.1: Strength of Founding Intentions, Singapore versus Global

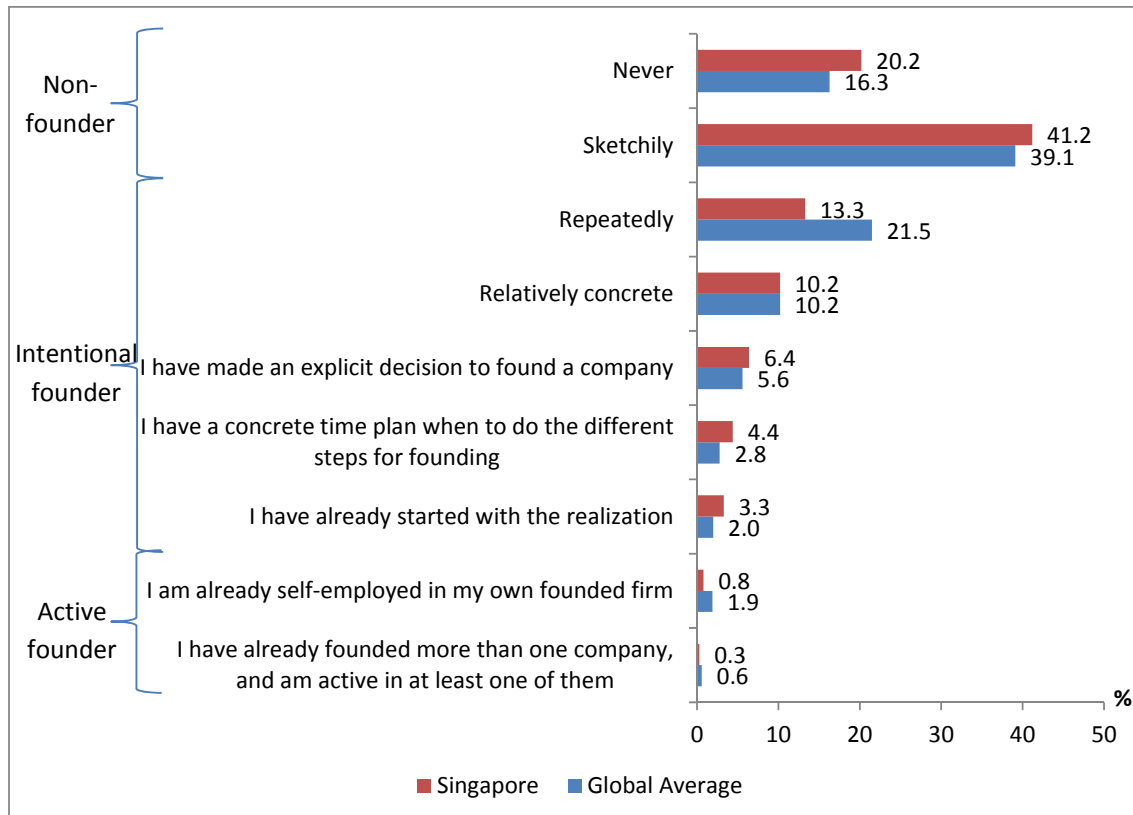
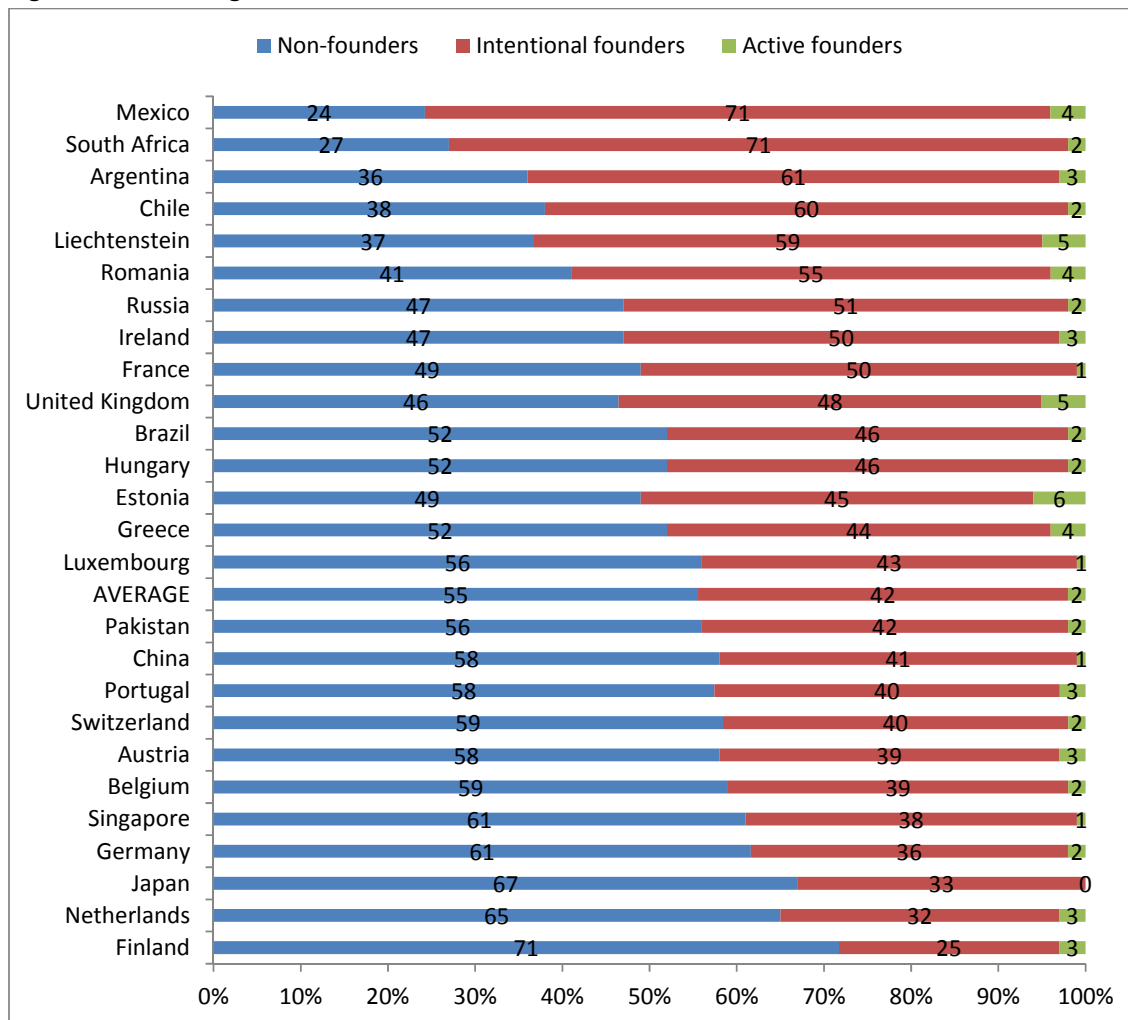


Figure 2.2: Founding Intention across Countries

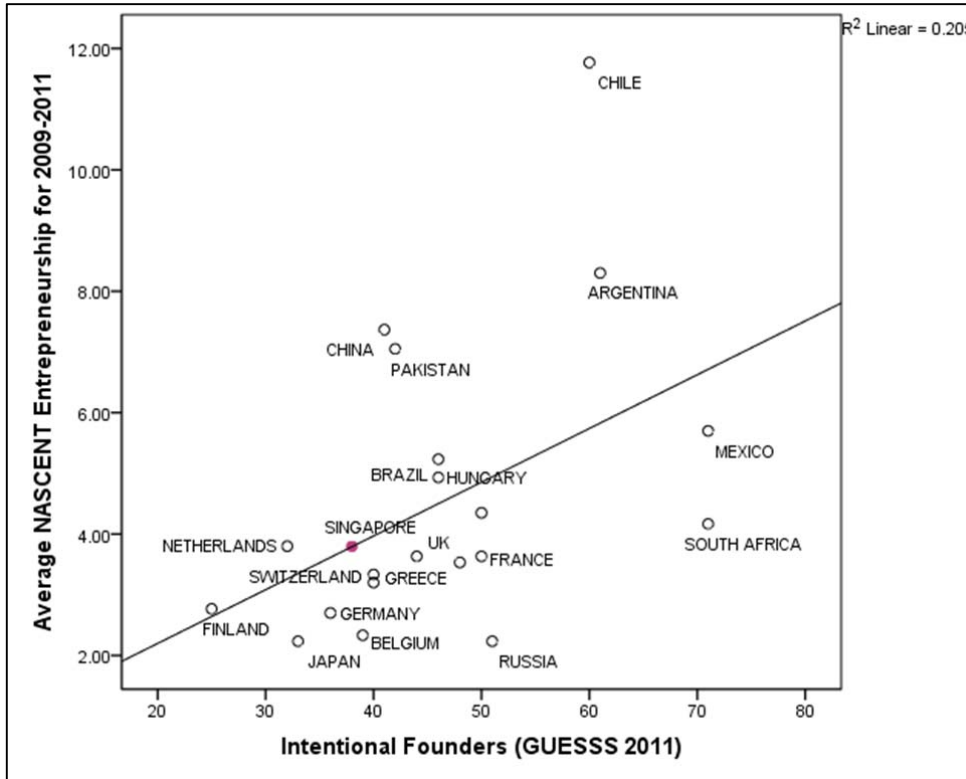


Mexico, South Africa and Argentina reported the highest percentage of intentional founders (**Figure 2.2**). Meanwhile, the percentages of active founders are highest in Estonia, Liechtenstein and United Kingdom. Singapore's share of intentional founders, at 38%, is comparable to a number of economies with intentional founder rates between 38% and 41%, including China and Switzerland.

As the basket of economies participating in GUESSS 2011 includes many developing countries, caution should be used when interpreting Singapore's position in the rankings for the rate of intentional founders. According to the Global Entrepreneurship Monitor (GEM) 2011, entrepreneurial intentions (defined by the percentage of individuals who expect to start a business within the next three years) differ widely across the economies in each stage of economic development. In particular, innovation-driven economies like Singapore are typically lower in entrepreneurial intentions. This is in contrast with factor-driven economies where fewer good job alternatives are available and entrepreneurs were pushed into starting business out of necessity (necessity-based entrepreneurship).

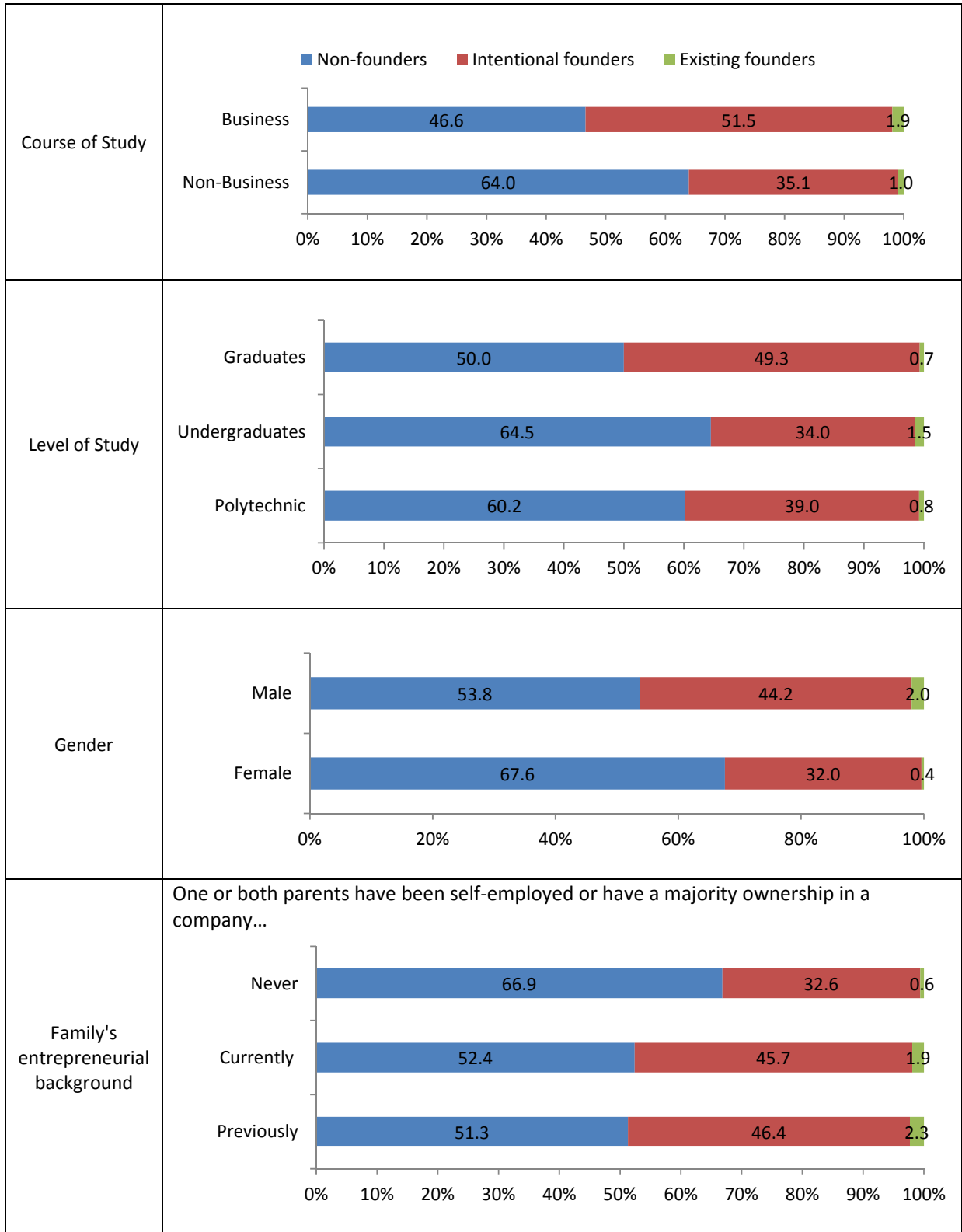
Figure 2.2a examines the average Nascent Entrepreneurship rates from GEM compared to the founding intentions in this study. As can be seen by Singapore's location on the fitted regression line, Singapore's student entrepreneurship rate is at par with what is expected given its level of nascent entrepreneurship. Please refer to **Annex D** for the correlations of GEM's Total Early Stage Entrepreneurial Activity (TEA) measure and the GUESSS indicator of intentional and active entrepreneurship.

Figure 2.2a: Average Nascent Entrepreneurship Rate 2009-2011 (GEM) and Percentage of Intentional Founders (GUESSS)



Nascent entrepreneurship is the entrepreneurial stage in advance of the start of a new firm, including preparatory efforts to launch; and in the first three months of running a new business. (Source: GEM 2011 Global Report)

Figure 2.3: Founding Intentions of Singapore Students



In Singapore, a significantly higher proportion of students in business schools or faculties (51.5%) than non-business schools (35.1%) have expressed serious interest in setting up their own

businesses (**Figure 2.3**). The business schools (1.9%) also have more active founders than non-business schools (1.0%).

Graduate students (49.3%) reported greater interest in entrepreneurship than undergraduates (34.0%) and diploma students (39.0%). However, there were more undergraduates (1.5%) who have already founded their own businesses and are active in self-founded companies compared to graduates (0.7%) and polytechnic students (0.8%).

Significantly more male students have entrepreneurial intention (44.2% are intentional founders and 2.0% are active founders) compared to their female counterparts (32.0% of female students are intentional founders and 0.4% are active founders).

The family background of students appears to influence their entrepreneurial intentions. The students with one or both parents who have been self-employed, either currently (45.7%) or formerly (46.4%), indicated significantly stronger interest in becoming entrepreneurs compared to those with parents who have never been self-employed (32.6%). The students with parents who own or owned a business are also much more likely to be active founders (1.9% and 2.3% respectively, compared to only 0.6% of students without entrepreneurial parents).

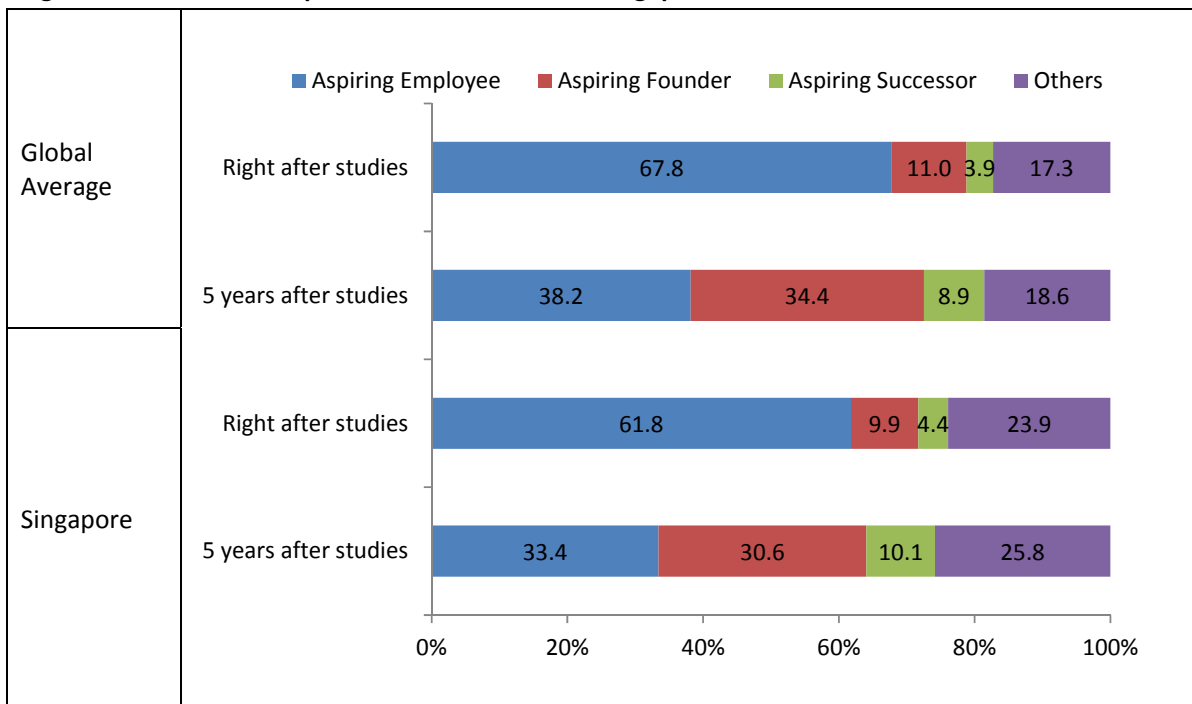
2.2 Entrepreneurial Aspiration (Entrepreneurship as Career Choice)

A second aspect of entrepreneurial intention is the career aspiration of students to choose entrepreneurship as a career after they leave full-time studies. Students were asked to indicate the career path they intended to pursue in the immediate term (directly after completing their studies) and in the longer term (5 years after completion of studies).

Their career aspirations are summarized into 4 main groups:

- (i) Aspiring Employee, who seeks to work in a salaried job;
- (ii) Aspiring Founder, who wishes to found a new firm or to be self-employed;
- (iii) Aspiring Successor, who plans to continue or take over an existing firm, whether owned by family members or by others;
- (iv) Others, including non-employment or continuing further studies.

Figure 2.4: Vocational Aspirations of IHL Students, Singapore versus Global



14.3% of students in Singapore IHLs aspire to be involved in entrepreneurial activities, either founding own business or taking over an existing business, immediately after completing their studies (**Figure 2.4**). This proportion is comparable to the global average. A higher percentage, 40.7% of Singapore students, has entrepreneurial aspirations in the longer term, 5 years after completing their studies. This proportion is slightly lower than the global average of 43.3%.

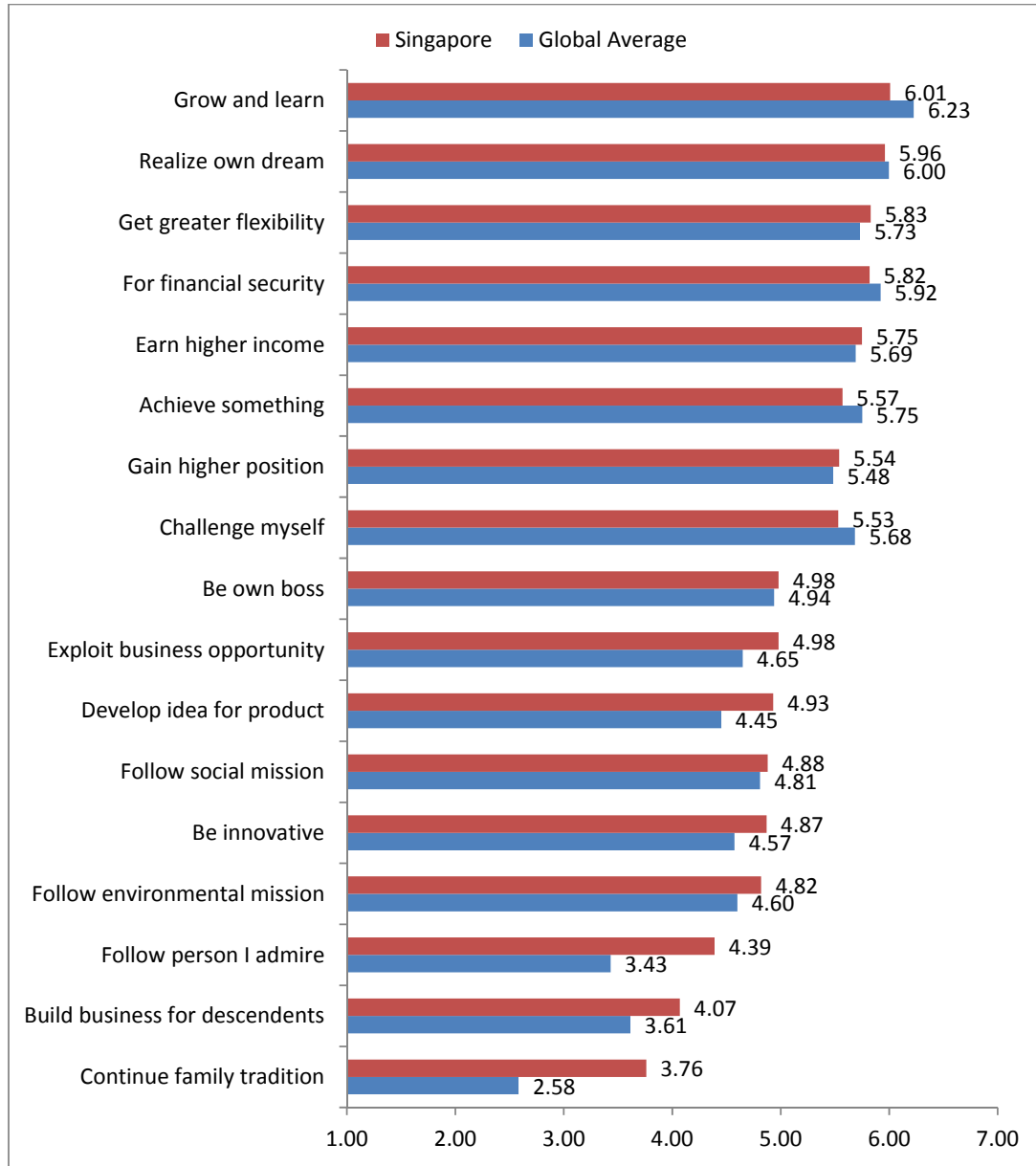
In Singapore, though only 9.9% of students aspire to be founder right after their studies, the number triples to 30.6% after 5 years. Similarly, 4.4% of the Singapore students intend to take over an existing business immediately after the studies; in contrast, 10.1% of them aspire to be successors 5 years after completion of their studies.

2.3 Motives of Students

To gain insights into the reasons and motives that are relevant to students’ career choice, students were asked how important different motives are for their future work and career path.

In Singapore, the three most important motives to students are to grow and learn, to realize own dream, and to have greater flexibility (**Figure 2.5**). Comparably, the three most important motives for students across the global sample are to grow and learn, to realize own dream, and to achieve financial security.

Figure 2.5: Career Choice Motives, Singapore versus Global



Importance of Career Choice Motives rated on 7-point scale where 1 = very unimportant and 7 = very important

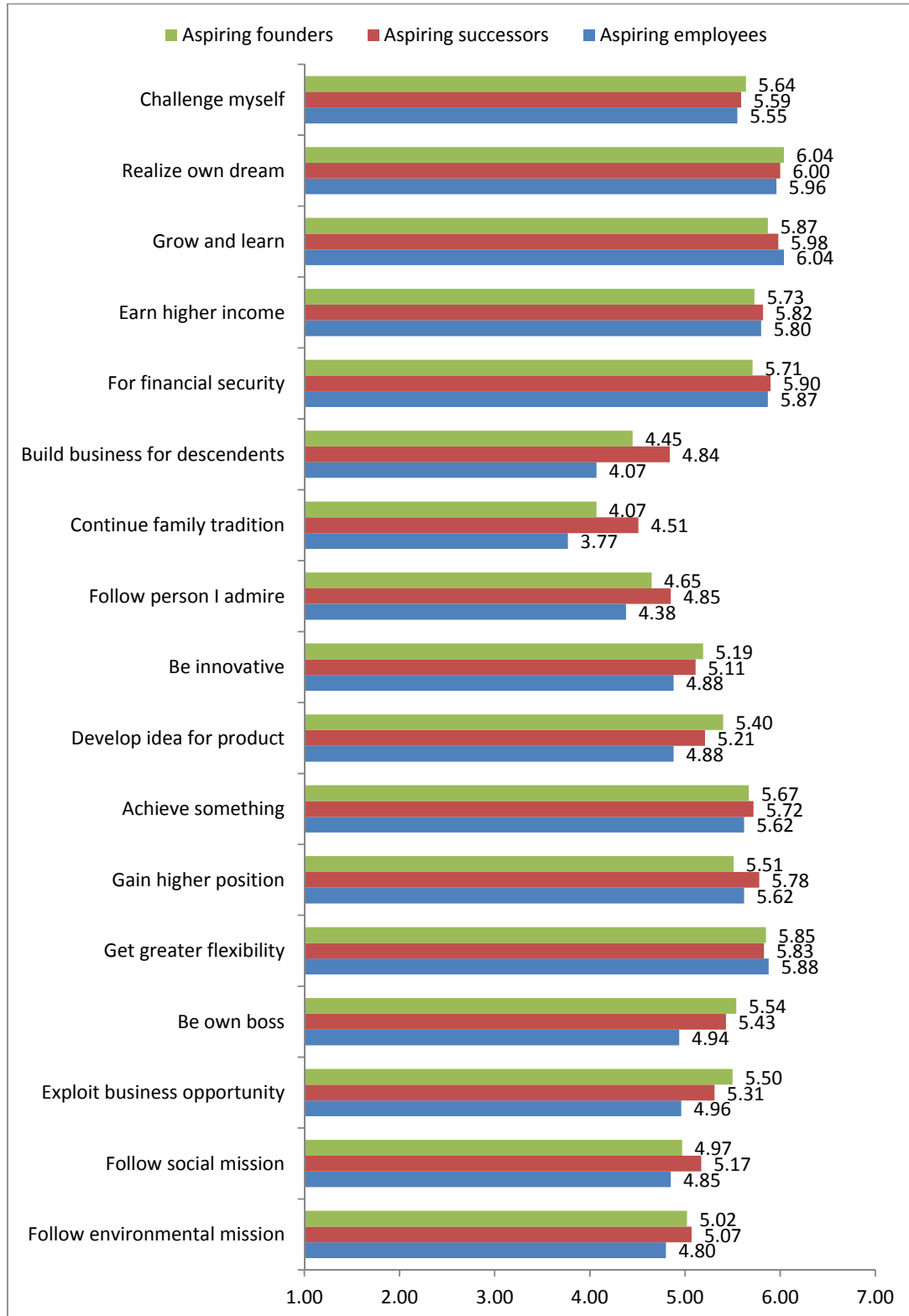
Research has shown that different motives have a significant effect on students' aspiration to become employees, founders or successors (Zellweger, Sieger & Halter, 2011). In Singapore, the top motive for both aspiring founders (6.04 on a scale of 1 to 7) and successors (6.00) is to realize their own dreams (**Figure 2.6**). In contrast, aspiring employees expressed their top motive as being to grow and learn (6.04).

Several motives were found to significantly differentiate the career aspirations of IHL students in Singapore. Firstly, the motive of being one's own boss is a significant driver of entrepreneurial career aspirations. Students who aspire to be self-employed or to found a new business are more strongly motivated to be their own boss (5.54) compared to those who aspire to be salaried employees (mean rating of 4.94). Those who aspire to succeed to an existing business are also strongly motivated to be their own boss (mean rating of 5.43).

Aspiring founders are also more strongly motivated by the desire to be innovative (mean rating of 5.19 compared to 4.88 for aspiring employees), to develop ideas for products (mean rating of 5.4 compared to 4.88 for aspiring employees) and to exploit business opportunities (mean rating of 5.5 compared to 4.96 for aspiring employees). They appear to be slightly less concerned about earning high incomes or financial security compared to students who are aspiring employees.

Those who aspire to be successors to an existing business are naturally more strongly motivated by the desire to build and follow a family legacy. Continuing a family tradition was rated 4.84 by aspiring successors, compared to much lower ratings of 3.77 by aspiring employees and 4.07 by aspiring founders. Similarly, aspiring successors are more strongly motivated to build a business for their descendants (4.84) compared to aspiring employees (4.07) and founders (4.45).

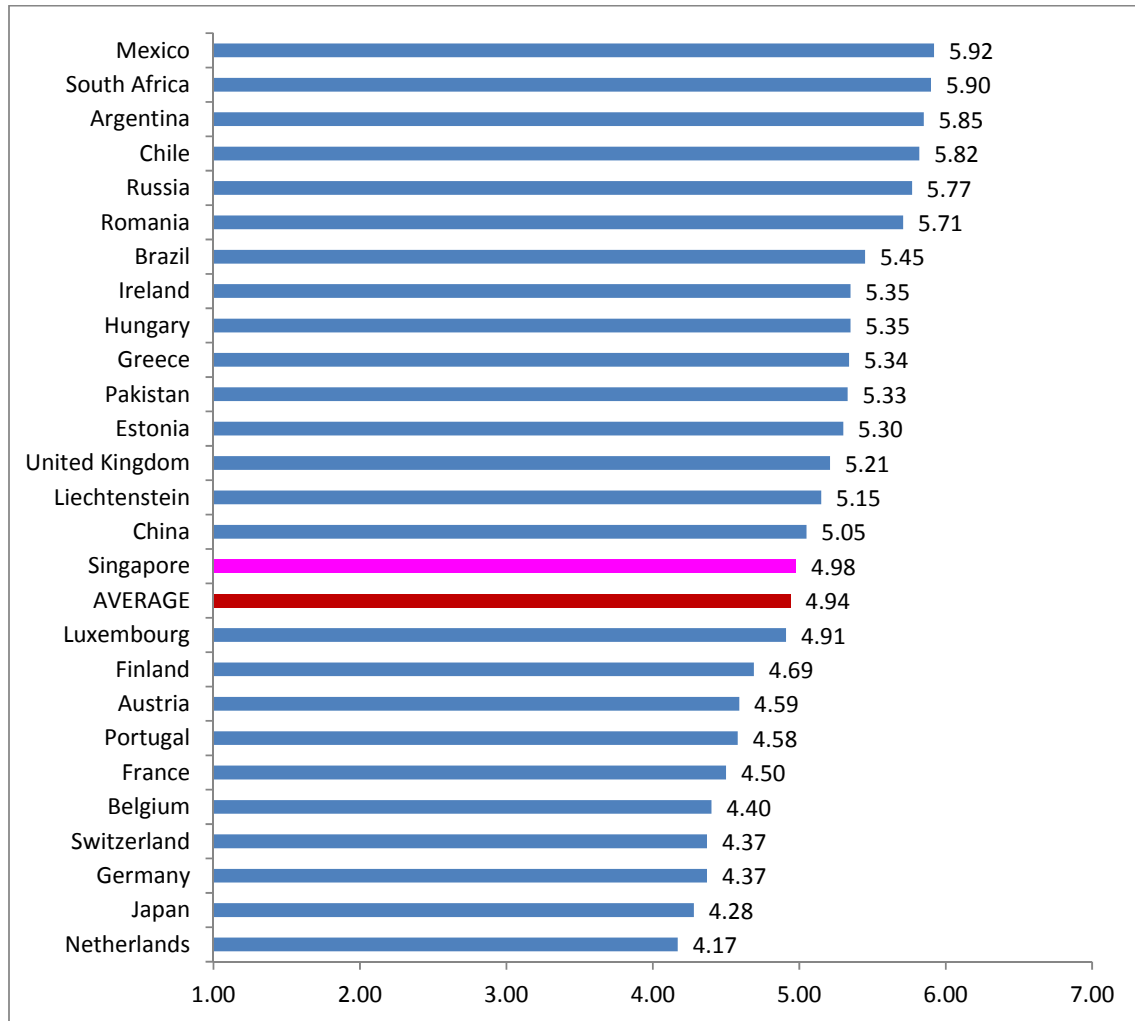
Figure 2.6: Career Choice Motives across Entrepreneurial Intentions (Singapore)



Importance of Career Choice Motives rated on 7-point scale where 1 = very unimportant and 7 = very important

Research has shown that the motive to be one’s own boss is very relevant in the context of new venture creation (Carter et al. 2003, Zellweger et al. 2011). The strength of motivation to be one's own boss is especially strong in Mexico, South Africa and Argentina, while it is found to be less important in Netherlands, Japan and Germany (**Figure 2.7**). The strength of being own boss for Singapore students is 4.98 on a 7 point scale, slightly higher than global average of 4.94, ranking Singapore 16th out of 26 countries.

Figure 2.7: Strength of Being Own Boss Motive across Countries



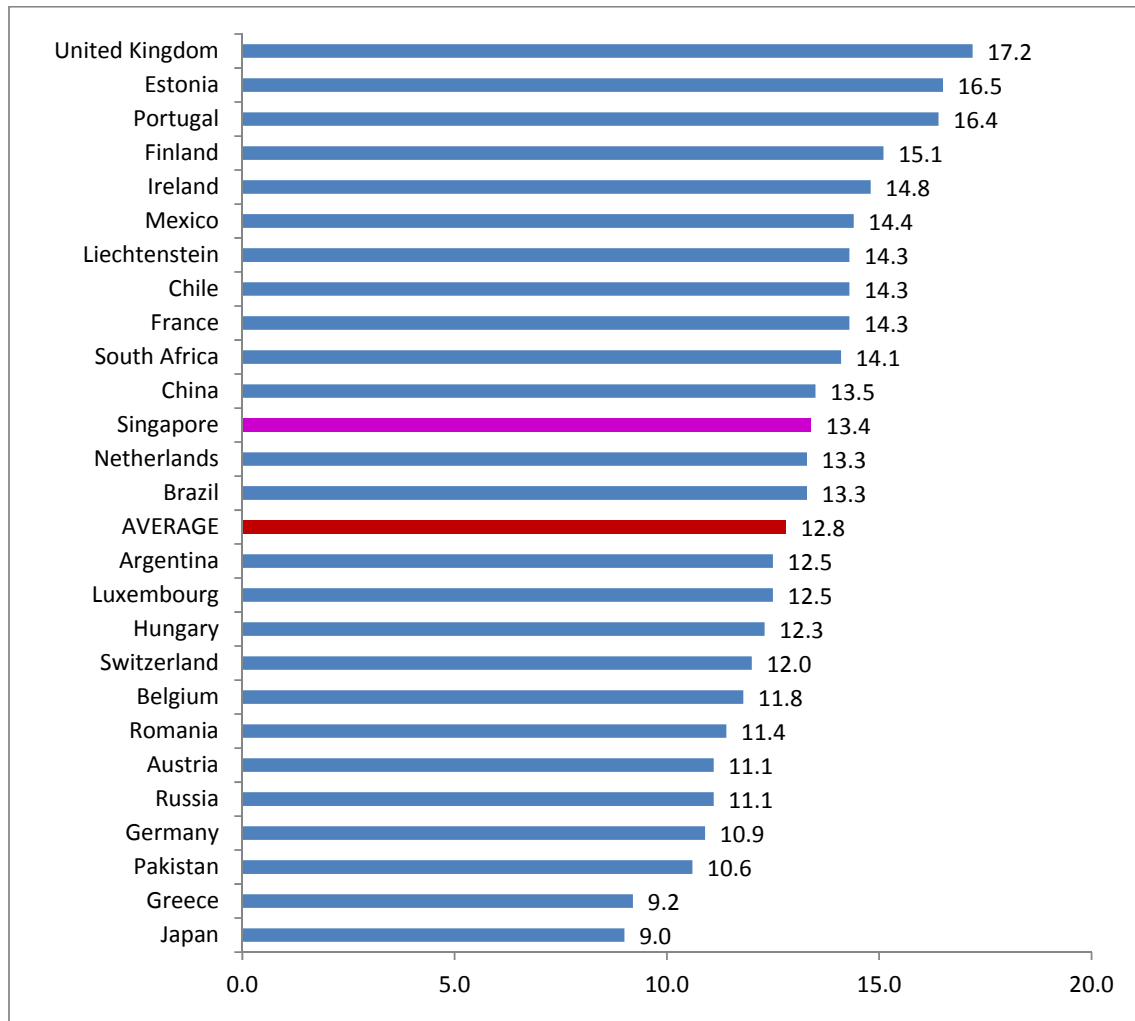
Strength of being own boss motive rated on 7-point scale where 1 = very unimportant and 7 = very important

3 ENTREPRENEURSHIP INDEX

The Entrepreneurship Index quantifies the entrepreneurial power of students across countries. The index is calculated based on two components: the students’ founding intentions (if and how seriously students have been thinking about founding an own company) and the steps taken to found a company. For the detailed explanation on the calculation, please refer to Sieger et al. (2011, pg 37).

As students in different courses of study are not equally represented across countries, and their entrepreneurial attitudes and activities differ, the analysis was split according to the course of study.

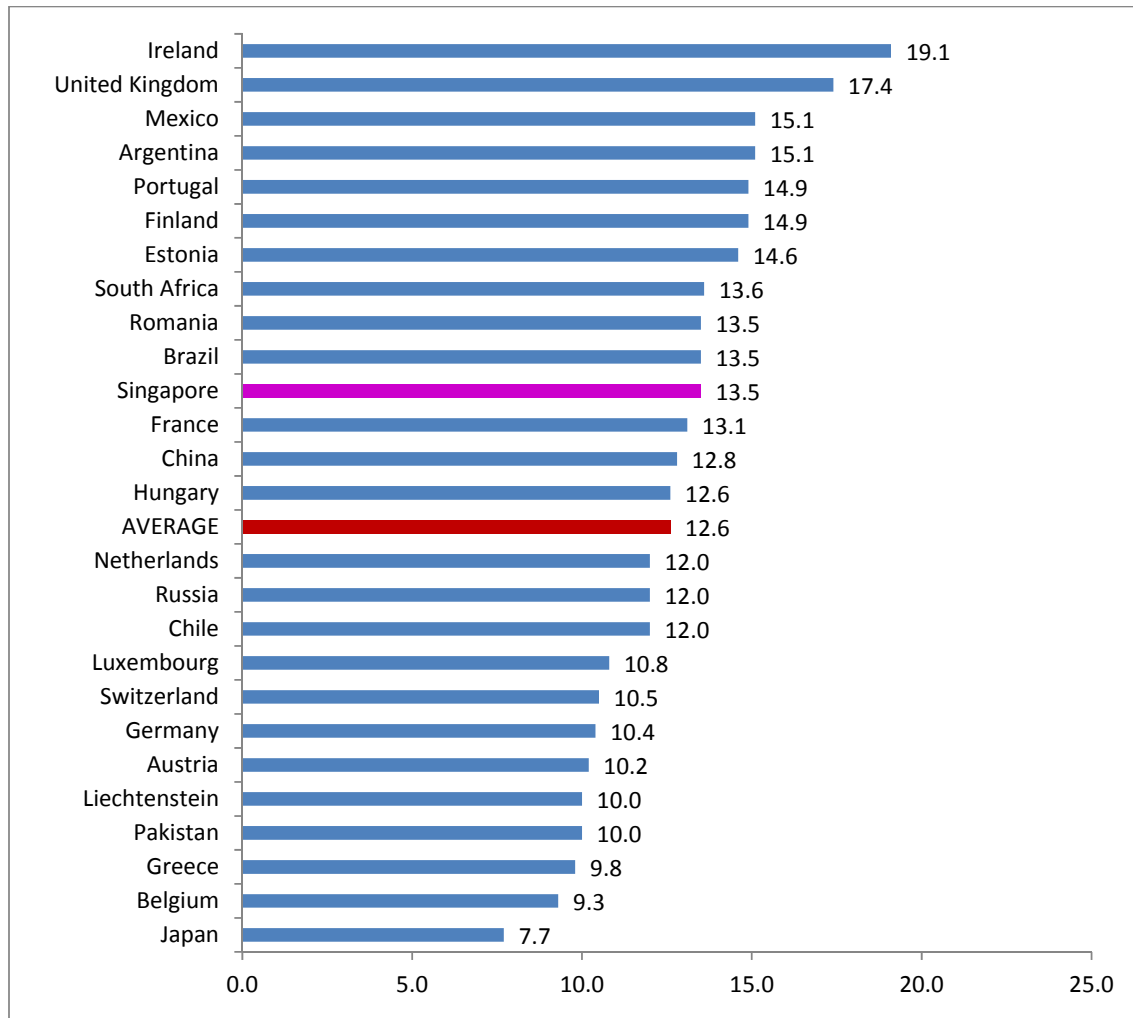
Figure 3.1: Entrepreneurship Index for Business Students across Countries



*Business study includes management / business administration, economics.

The highest entrepreneurial index among business students was reported for the United Kingdom, Estonia and Portugal (**Figure 3.1**). The lowest entrepreneurial index is observed in Pakistan, Greece and Japan. The entrepreneurial index among business students from Singapore is 13.4, higher than the global average of 12.8, ranking Singapore 12th of 26 countries.

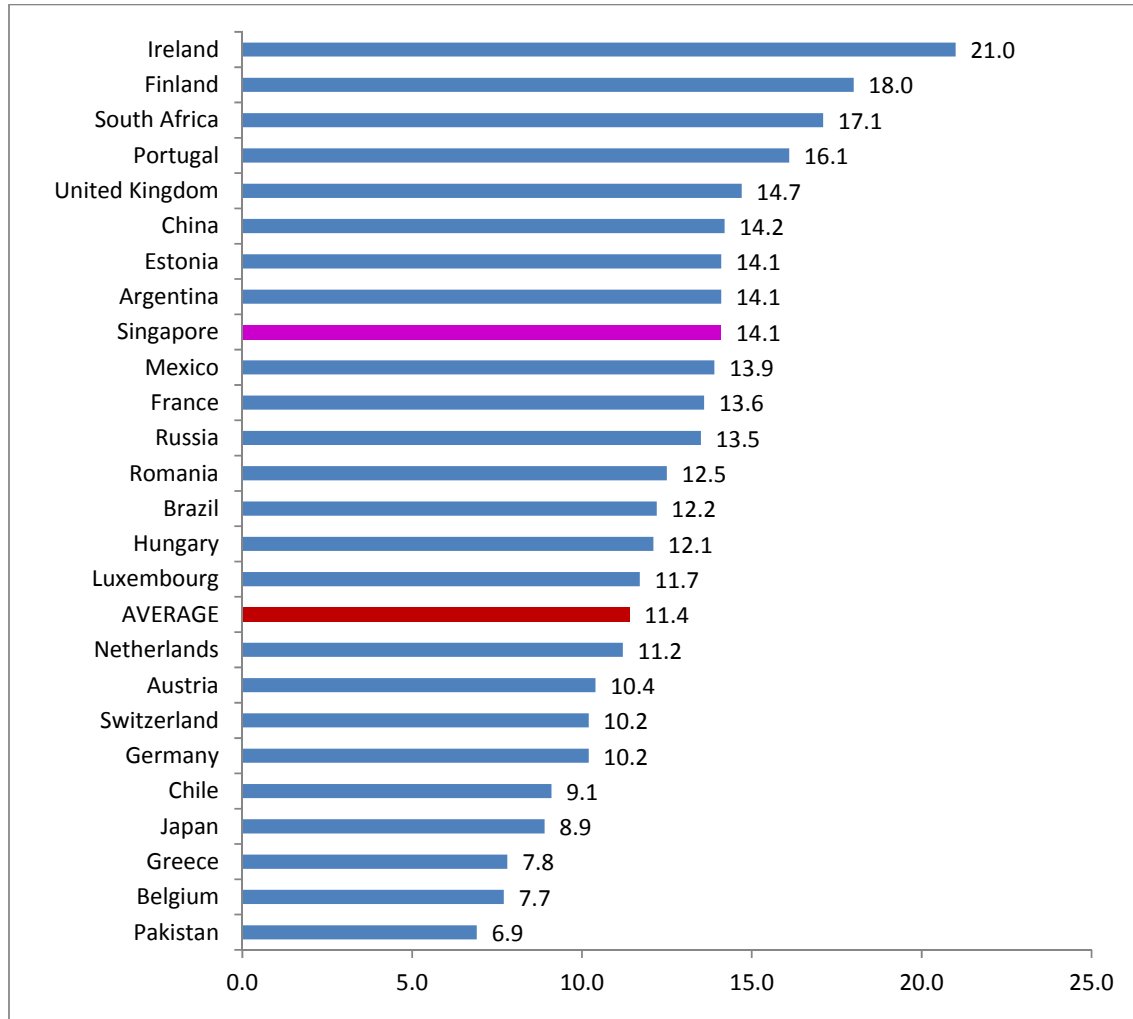
Figure 3.2: Entrepreneurship Index for Natural Science Students across Countries



*Natural sciences study includes medicine / health sciences, mathematics / natural sciences, engineering, architecture, computer sciences, etc.

The entrepreneurship index for natural science students ranges from 19.1 for Ireland to 7.7 for Japan (**Figure 3.2**). The index for natural science students from Singapore IHLs stands at 13.5, higher than global average of 12.6, ranking Singapore's 9th out of 26 countries.

Figure 3.3: Entrepreneurship Index for Social Science Students across Countries

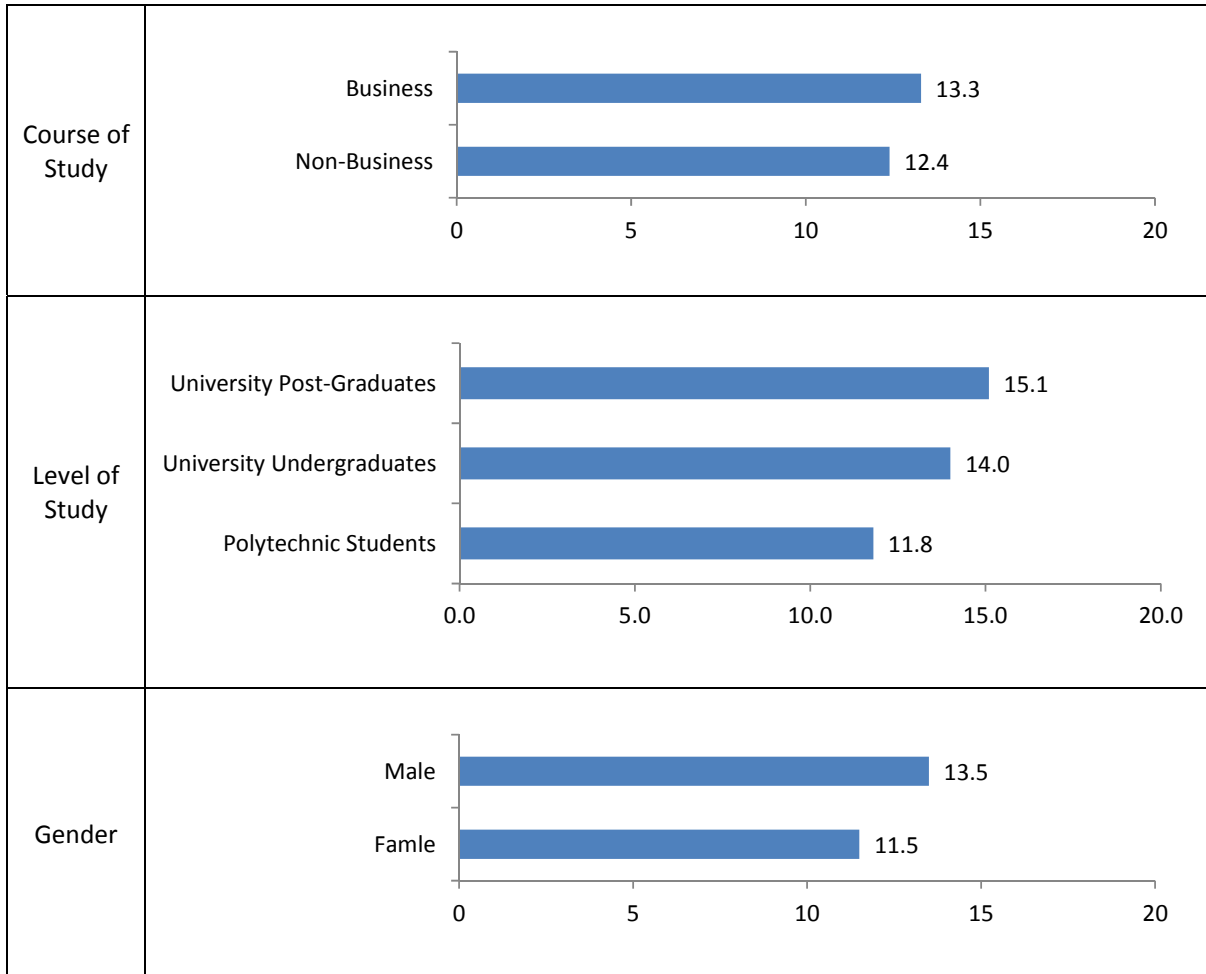


*Social sciences study includes linguistics, cultural studies, religion, philosophy, psychology, education / pedagogy, sociology, etc.

The entrepreneurship index for social science students is highest for Ireland (21.0) and lowest for Pakistan (6.9) (**Figure 3.3**). The global index for social science students (11.4) is lower than for business (12.8) and natural science (12.6) students. In Singapore, the entrepreneurship index is 14.1, higher than global average of 11.4, ranking Singapore 7th of 26 countries.

In all cases, we observe that Singapore's Entrepreneurship Index values are higher than the global averages. While Singapore's entrepreneurship intention rate is lower than the global average (as seen earlier in Section 2), students in Singapore IHLs have taken more advanced steps to actualize their intentions compared to the majority of students in the other GUESSS participating countries.

Figure 3.4: Entrepreneurship Index for Singapore IHLs Students



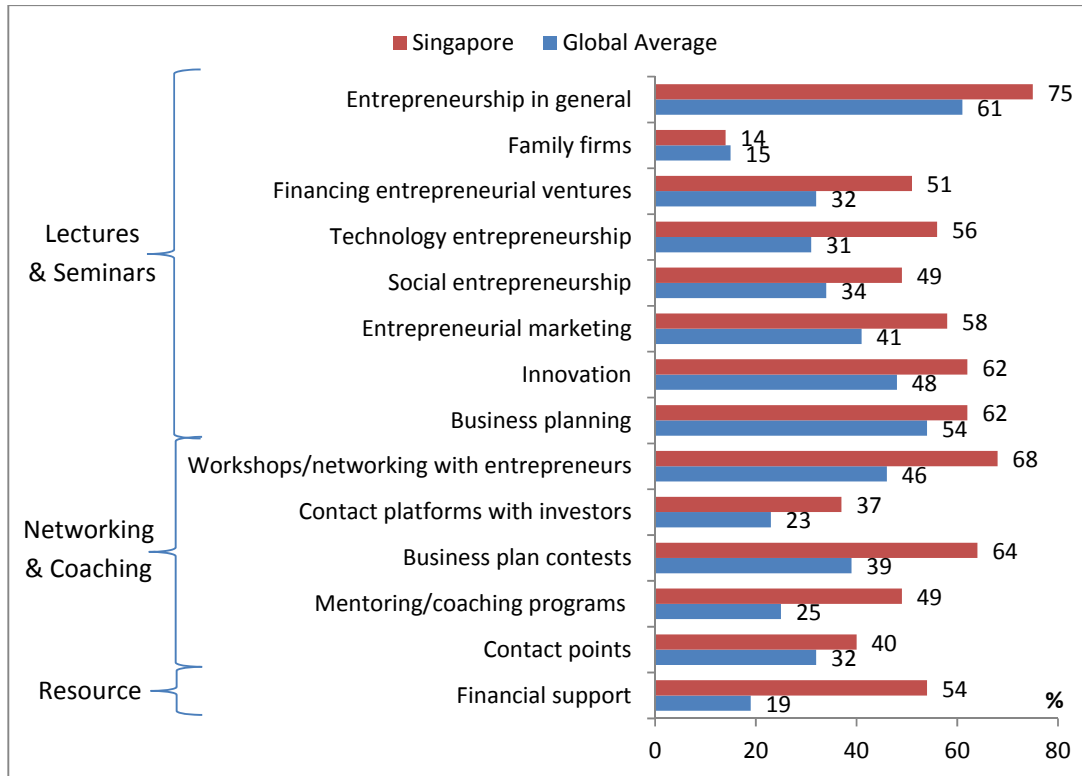
In Singapore, the entrepreneurship index for business students (13.3) is slightly higher than non-business students (12.4) (**Figure 3.4**). The university students (15.1 for post graduates and 14.0 for undergraduates) reported significantly higher entrepreneurship index values than polytechnic students (11.8). In addition, male students (13.5) also registered a significantly higher entrepreneurship index value compared to female students (11.5).

4 ENVIRONMENT FOR ENTREPRENEURSHIP IN SINGAPORE UNIVERSITIES AND POLYTECHNICS

4.1 Awareness on Entrepreneurship Programs in IHLs

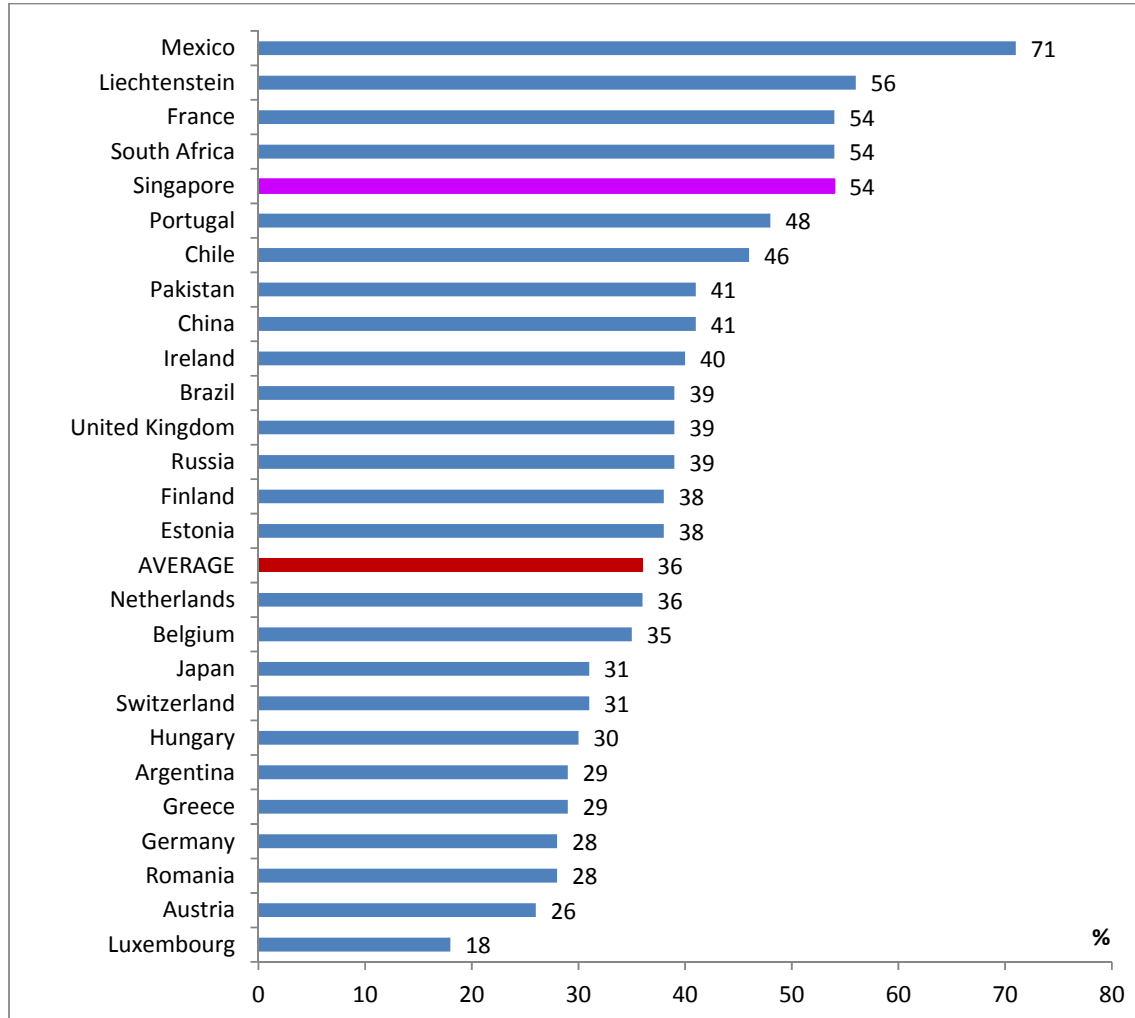
Singapore students reported relatively higher awareness on the various programs offered by their IHLs compared to the global average. In particular, there is high awareness of Singapore IHLs' offerings in financial support, mentoring programs, and business plan competitions (Figure 4.1).

Figure 4.1: Awareness of IHL Entrepreneurship Programs, Singapore versus Global



52% of Singapore students are aware that some form of entrepreneurship programs were offered at their IHL (**Figure 4.2**). This is significantly higher than the global average of 36%, ranking Singapore 5th out of 26 countries in terms of awareness.

Figure 4.2: Awareness of IHL Entrepreneurship Programs by Country



Across the board, intentional entrepreneurs reported higher awareness of various entrepreneurial programs offered by IHLs, in comparison to those who are not interested to become entrepreneurs (Table 4.1). Intentional founders from university expressed higher awareness on entrepreneurship programs compared to their polytechnic counterparts.

Table 4.1: Awareness of Entrepreneurship Offerings at IHLs (All students and Intentional Entrepreneurs)

Percent (%) Aware of Entrepreneurship Offerings at IHLs	All Students	Intentional Entrepreneurs			
		Overall	University Postgraduates	University Undergraduates	Polytechnic Students
<i>Lectures and seminars about...</i>					
Entrepreneurship in general	74.6	78.2	80.9	89.9**	69.7
Family firms	14.2	19.2	14.7	21.7	18.2
Financing entrepreneurial ventures	50.8	55.4	59.8	62.8**	49.8
Technology entrepreneurship	56.2	62.3	87.1**	79.0	47.3
Social entrepreneurship	49.3	54.3	61.0	56.3	52.0
Entrepreneurial marketing	57.7	61.4	58.3	63.6	60.3
Innovation and idea generation	61.7	67.8	74.6	77.1**	60.5
Business planning	61.7	66.2	67.3	74.3**	60.6
<i>Networking and coaching offerings</i>					
Workshops/networking with experienced entrepreneurs	68.0	71.2	88.6**	79.3	63.1
Contact platforms with potential investors	37.5	41.3	47.0	54.4**	31.5
Business plan contests / workshops	63.7	69.2	88.4**	81.2	58.3
Mentoring and coaching programs for entrepreneurs	48.9	53.3	60.2	62.6**	45.9
Contact point for entrepreneurial issues	39.6	44.7	49.6	59.6**	33.9
<i>Provision of resources</i>					
Technology and research resources (library, web)	74.9	76.7	80.2	76.3	76.4
Seed funding / financial support from University/Polytechnic	54.4	59.3	48.5	66.7**	55.9

*Significant at 10%; **Significant at 5%

4.2 Participation and Demand for Entrepreneurship Offerings from IHLs

In this report, the demand for a IHL entrepreneurship program is defined as the sum of participation in a program (% who are aware and participated) and the expressed desire for such a program to be offered (% not aware but would like to have the program). The demand for most of the entrepreneurial programs is significantly higher at the global level compared to those in Singapore (**Table 4.2**). The only two programs that are in higher demand by Singapore students are lectures about family firms (46.4%) and social entrepreneurship (54.2%).

Generally, we observe that less than 2/3 of the Singapore students participated in various entrepreneurial programs, except in the area of technology and research resources provided through library and webs (**Table 4.2**). There is, however, quite high demand from those who are not aware of the programs but would like to have them, especially for networking and coaching offerings.

Table 4.2: Demand for Entrepreneurship Programs, Singapore versus Global

Percentage (%) of Participation and Demand for Entrepreneurship Programs	SINGAPORE			Total Demand (Global)
	Aware and Participated	Not Aware but Would like to have	Total Demand (Singapore)	
Lectures and seminars about...				
Entrepreneurship in general	33.0	16.6	49.6	58.8
Family firms	5.2	40.4	45.6	42.6
Financing entrepreneurial ventures	14.8	30.9	45.7	56.9
Technology entrepreneurship	18.5	22.4	40.9	46.4
Social entrepreneurship	18.5	34.2	52.7	51.4
Entrepreneurial marketing	19.5	27.0	46.5	50.7
Innovation and idea generation	27.3	27.0	54.3	62.1
Business planning	24.1	26.5	50.6	58.9
Networking and coaching offerings				
Workshops/networking with experienced entrepreneurs	26.6	21.2	47.8	58.5
Contact platforms with potential investors	10.3	40.9	51.2	58.6
Business plan contests / workshops	20.1	21.9	42.0	49.7
Mentoring and coaching programs for entrepreneurs	14.7	34.7	49.4	55.5
Contact point for entrepreneurial issues	11.0	37.3	48.3	57.7
Provision of resources				
Technology and research resources (library, web)	41.5	15.6	57.1	71.4
Seed funding / financial support from University/Polytechnic	20.5	32.5	53.0	65.0

4.2.1 Demand by Intentional Entrepreneurs, University versus Polytechnic

We take a closer look at the intentional entrepreneurs' demand for various IHLs' programs as these programs are of greater relevance to them; by nurturing this group of students through various programs, it is hoped that IHLs can help to materialize the students' aspirations to be real entrepreneurs in future.

Lectures and seminars about family firms reported relatively lower participation among the intentional entrepreneurs; incidentally, they are among the most desired programs to be made available (**Table 4.3**). This shows a gap in the supply of such courses and the awareness of their existence.

Postgraduate students reported significantly higher participation in technology entrepreneurship programs (51.5%) compared to undergraduates (30.8%) and polytechnic students (20.6%). While participation in technology entrepreneurship courses is low among the polytechnic students, this appears to be mainly caused by lack of awareness. 32.3% of intentional founders in polytechnics are not aware of technology entrepreneurship courses being offered at their IHLs but would like to have such courses.

We also found that intentional founders from polytechnic indicated significantly higher demand for networking and coaching offerings compared to their counterparts from university. In particular, a higher share of polytechnic intentional entrepreneurs has participated or would like to participate in business plan competitions, compared to university entrepreneurs. This suggests that business plan competitions can be an especially useful avenue for imparting relevant skills and resources to aspiring entrepreneurs at this level. Polytechnic students also have higher demand for networking opportunities with experienced entrepreneurs and for mentoring programs, showing that access to experienced entrepreneurs is a priority.

Additionally, it is also notable that that many of the intentional entrepreneurs in polytechnics are not aware of the range of networking and coaching programs on offer at their IHLs. More promotion of existing programs may be needed to increase awareness levels.

Table 4.3: Demand for Entrepreneurship Programs by Intentional Entrepreneurs, University versus Polytechnic

Percentage (%) of Participation and Demand for Entrepreneurship Programs	Aware and Participated			Not Aware but Would Like to Have		
	University Postgraduates	University Undergraduates	Polytechnic Students	University Postgraduates	University Undergraduates	Polytechnic Students
<i>Lectures and seminars about...</i>						
Entrepreneurship in general	58.6**	47.2	41.7	14.6	8.8	22.7**
Family firms	7.6	7.1	9.0	42.0	45.0	43.8
Financing entrepreneurial ventures	25.7	23.7	19.3	32.7	33.9	36.9
Technology entrepreneurship	51.5**	30.8	20.6	6.4	14.6	32.3**
Social entrepreneurship	29.7	23.9	26.6	29.1	33.7	36.6
Entrepreneurial marketing	28.7	26.6	29.4	37.9	31.9	29.3
Innovation and idea generation	42.5	37.9	33.6	20.9	20.3	29.8**
Business planning	42.0	32.7	35.3	30.4	24.5	32.3**
<i>Networking and coaching offerings</i>						
Workshops/networking with experienced entrepreneurs	48.2	39.5	36.9	9.9	18.7	28.7**
Contact platforms with potential investors	22.0**	20.8	12.7	44.6	42.1	51.5**
Business plan contests / workshops	34.9	31.8	28.0	10.1	16.2	31.7**
Mentoring and coaching programs for entrepreneurs	27.4	20.8	21.1	34.9	34.6	42.4**
Contact point for entrepreneurial issues	18.1	19.7**	13.7	45.9	34.3	47.4**
<i>Provision of resources</i>						
Technology and research resources (library, web)	63.2**	46.2	46.7	17.5	20.4**	14.5
Seed funding / financial support from University/Polytechnic	21.2	23.0	27.0	47.6**	30.4	34.6

*Significant at 10%; **Significant at 5%

4.2.2 Demand by Intentional Entrepreneurs By Type of Course (Business versus Non-Business)

Intentional entrepreneurs from non-business school (eg. Engineering, Science) have markedly higher participation rate (26.6%) in technology entrepreneurship programs, compared to their counterparts from business school (18.3%) (Table 4.4). Similarly, the aspiring entrepreneurs from non-business school reported higher take-up rate for financial support from their IHLs.

Intentional entrepreneurs from non-business school expressed a higher demand for general entrepreneurship programs (19.7% compared to 14.5% from business school), business planning (23.0%, compared to 31.9%) and business plan competitions (17.9% compared to 28.6%) compared to those from business school.

Table 4.4: Demand for Entrepreneurship Programs by Intentional Entrepreneurs, Business versus Non-Business

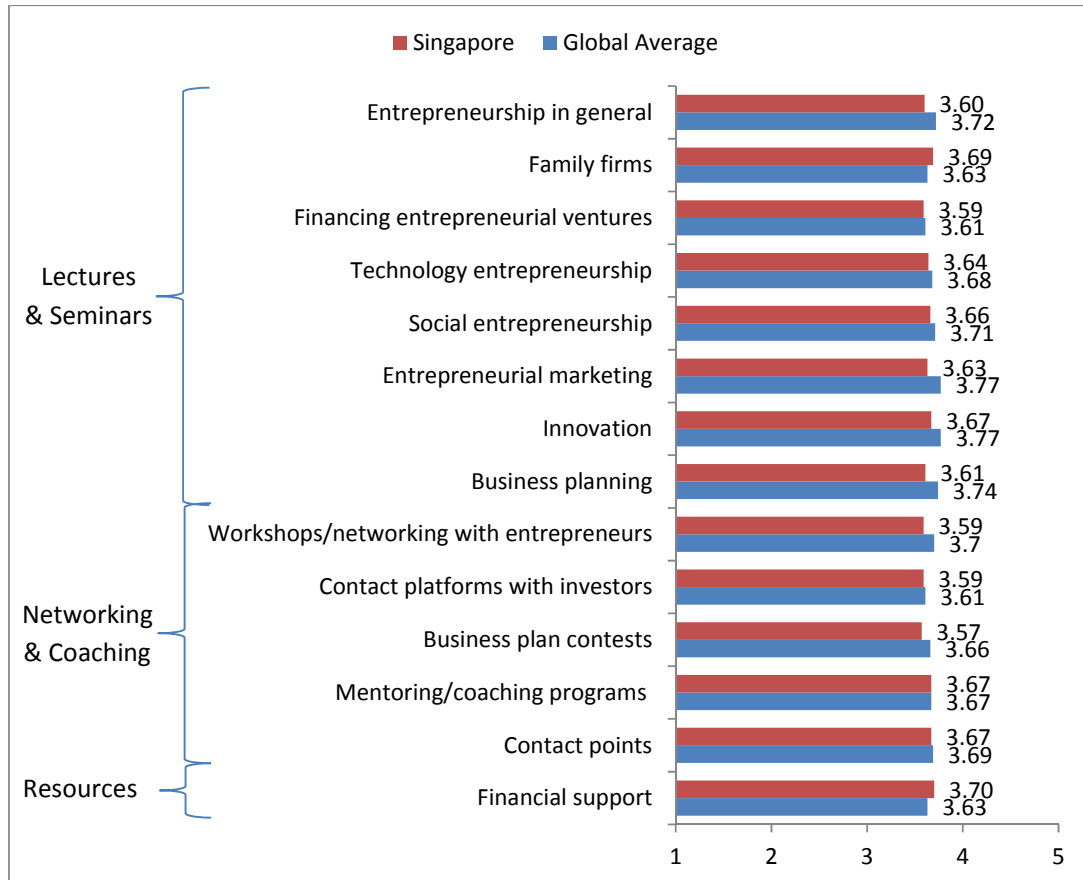
Percentage (%) of Participation and Demand for Entrepreneurship Program	Aware and Participated		Not Aware but Would Like to Have	
	Business	Non-Business	Business	Non-Business
<i>Lectures and seminars about...</i>				
Entrepreneurship in general	49.8*	42.7	14.5	19.7**
Family firms	8.1	8.5	44.7	43.9
Financing entrepreneurial ventures	22.6	20.3	34.5	36.4
Technology entrepreneurship	18.3	26.6**	26.4	26.2
Social entrepreneurship	25.1	26.4	34.9	35.5
Entrepreneurial marketing	28.5	28.6	33.2	29.9
Innovation and idea generation	40.0*	34.0	23.4	27.7
Business planning	44.3**	32.8	23.0	31.9**
<i>Networking and coaching offerings</i>				
Workshops/networking with experienced entrepreneurs	43.0	37.2	21.3	26.0
Contact platforms with potential investors	15.7	15.2	46.8	49.1
Business plan contests / workshops	32.3	28.6	17.9	28.6**
Mentoring and coaching programs for entrepreneurs	20.0	21.7	41.3	39.6
Contact point for entrepreneurial issues	17.0	15.1	42.1	44.4
<i>Provision of resources</i>				
Technology and research resources (library, web)	48.9	47.1	16.6	16.1
Seed funding / financial support from University/Polytechnic	18.7	27.2**	37.4	33.5

*Significant at 10%; **Significant at 5%

4.3 Satisfaction with IHLs' Entrepreneurship Programs

Slightly lower satisfaction was observed in the Singapore IHLs' entrepreneurship programs compared to the global average, except for lectures and seminars on family firms and financial resources (Figure 4.3). In Singapore, higher satisfaction was reported for financial support (3.70), lectures and seminars on innovation and idea generation (3.67), and family firms (3.66). On the other hand, lower satisfaction was reported by students who participated in events on contact platforms with investors (3.57), networking workshops with entrepreneurs (3.56) and business plan contests (3.56).

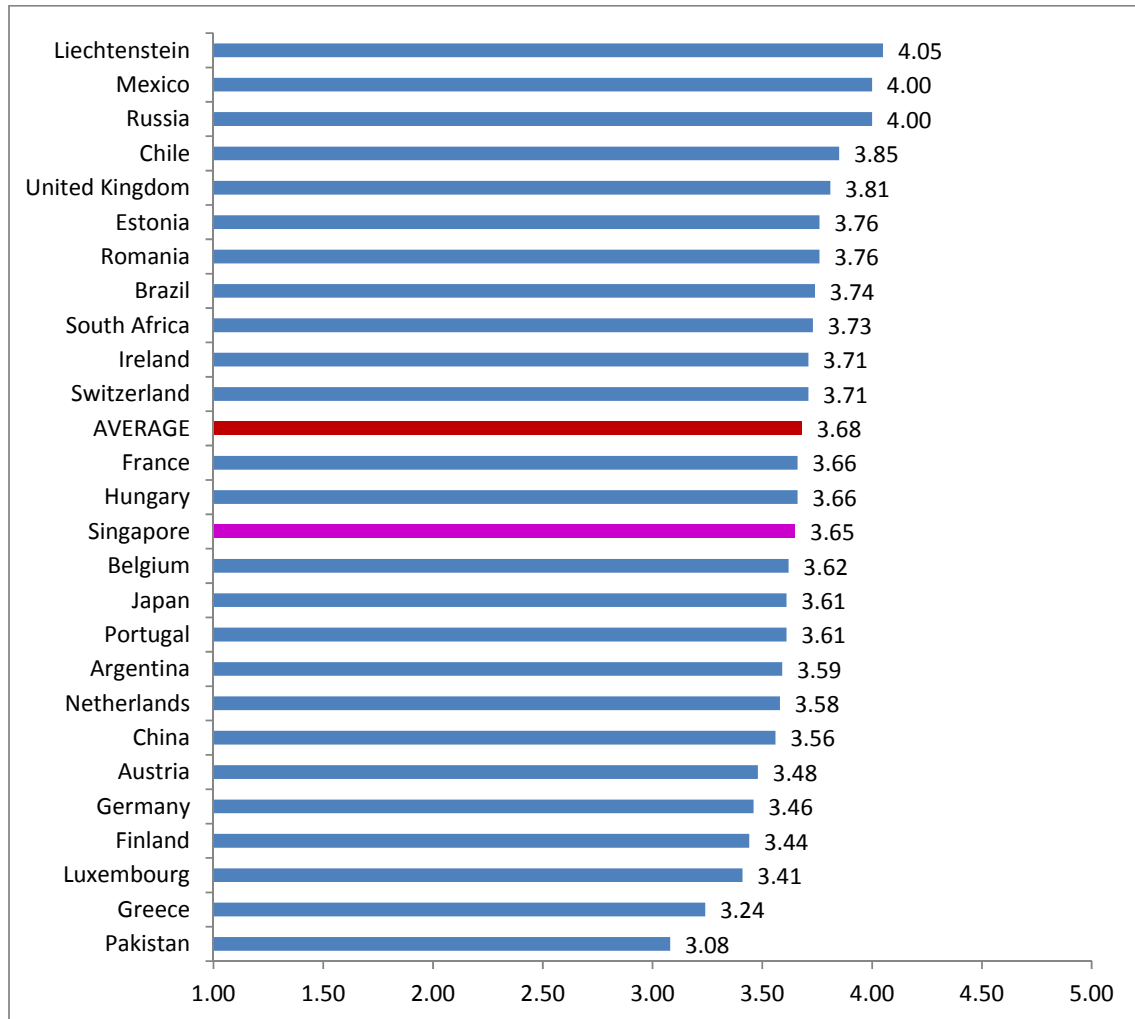
Figure 4.3: Students' Satisfaction with IHL Entrepreneurship Programs, Singapore versus Global



Satisfaction on 5-point scale where 1 = not at all and 5 = very much.

In Singapore, overall satisfaction for all entrepreneurship programs was 3.65 measured on a scale of 1 to 5, slightly lower than the global average of 3.68 (Figure 4.4).

Figure 4.4: Students' Satisfaction with IHL Entrepreneurship Programs by Country



Satisfaction on 5-point scale where 1 = not at all and 5 = very much.

Intentional entrepreneurs who are university students reported higher satisfaction from their participation of various entrepreneurship programs (Table 4.5) compared to their polytechnic counterparts.

Table 4.5: Students' Satisfaction with IHL Entrepreneurship Programs in Singapore (University versus Polytechnic)

Satisfaction with IHL Entrepreneurship Programs Rated on 5-point Scale (1 = Not at All, 5 = Very Much)	University			Polytechnic		
	Non-Founders	Intentional Founders	Active Founders	Non-Founders	Intentional Founders	Active Founders
Lectures and seminars about...						
Entrepreneurship in general	3.63	3.75*	3.86	3.43	3.61	3.80
Family firms	3.93	3.78	3.00	3.58	3.63	3.00
Financing entrepreneurial ventures	3.79	3.62	3.78	3.43	3.60	3.50
Technology entrepreneurship	3.75	3.70	3.75	3.50	3.64	3.25
Social entrepreneurship	3.74	3.66	3.88	3.65	3.60	4.00
Entrepreneurial marketing	3.86	3.65	3.80	3.54	3.61	3.75
Innovation and idea generation	3.64	3.67	4.00	3.63	3.69	3.80
Business planning	3.67	3.64	4.00	3.52	3.63	3.80
Networking and coaching offerings						
Workshops/networking with experienced entrepreneurs	3.70	3.65	3.92	3.51	3.53	3.60
Contact platforms with potential investors	3.72	3.68	3.29	3.55	3.49	2.75
Business plan contests / workshops	3.66	3.65	3.73	3.47	3.55	3.50
Mentoring and coaching programs for entrepreneurs	3.60	3.89**	3.60	3.62	3.60	3.20
Contact point for entrepreneurial issues	3.73	3.89**	3.70	3.55	3.50	3.00
Technology and research resources (library, web)	3.90	3.82	4.18	3.75	3.77	3.67
Seed funding / financial support from University/Polytechnic	3.78	3.73	3.33	3.60	3.84	3.00

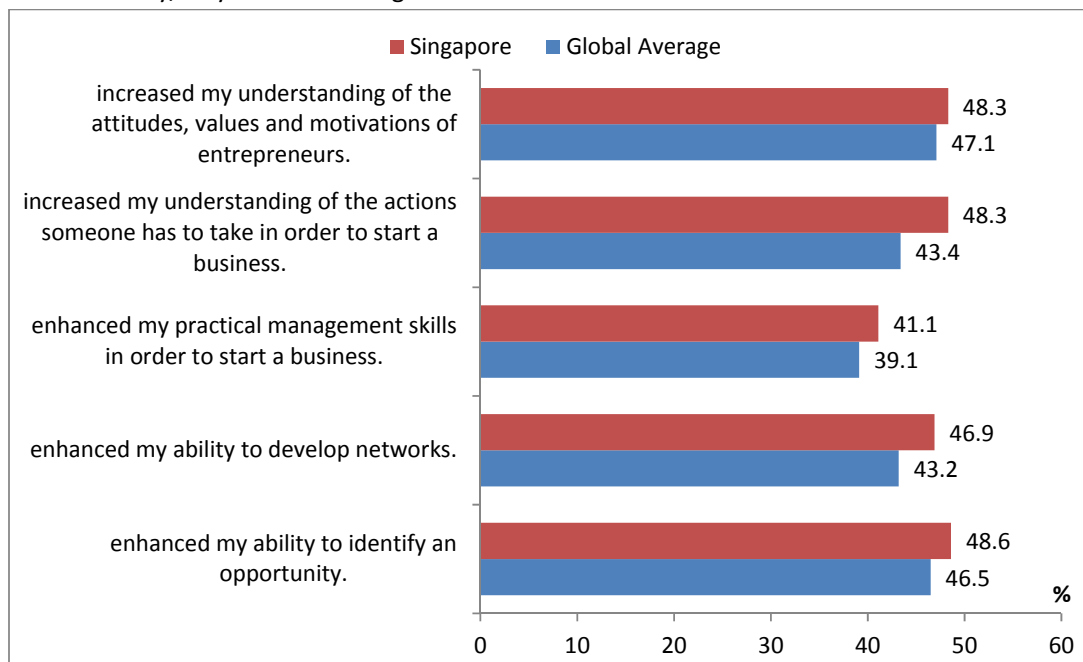
*Significant at 10%; **Significant at 5%

4.4 Perception of Climate in IHLs

Singapore IHLs are perceived to provide programs that are helpful in equipping students with knowledge about entrepreneurship and skills to become an entrepreneur (Figure 4.5). About half of the students perceived that attending their IHLs’ entrepreneurial programs increased their understanding on the demands of entrepreneurship. Furthermore, the students indicated that Singapore IHLs have enhanced their capabilities to found and manage their own companies. Close to half the students agreed that their IHL education has helped them to better identify business opportunities (48.6%) and to develop networks (46.9%), while 41.1% indicated that their IHL education has enhanced their practical management skills.

Figure 4.5: Perceptions of Offerings in Singapore University/Polytechnics versus Global

The University/Polytechnic offerings I attended.....

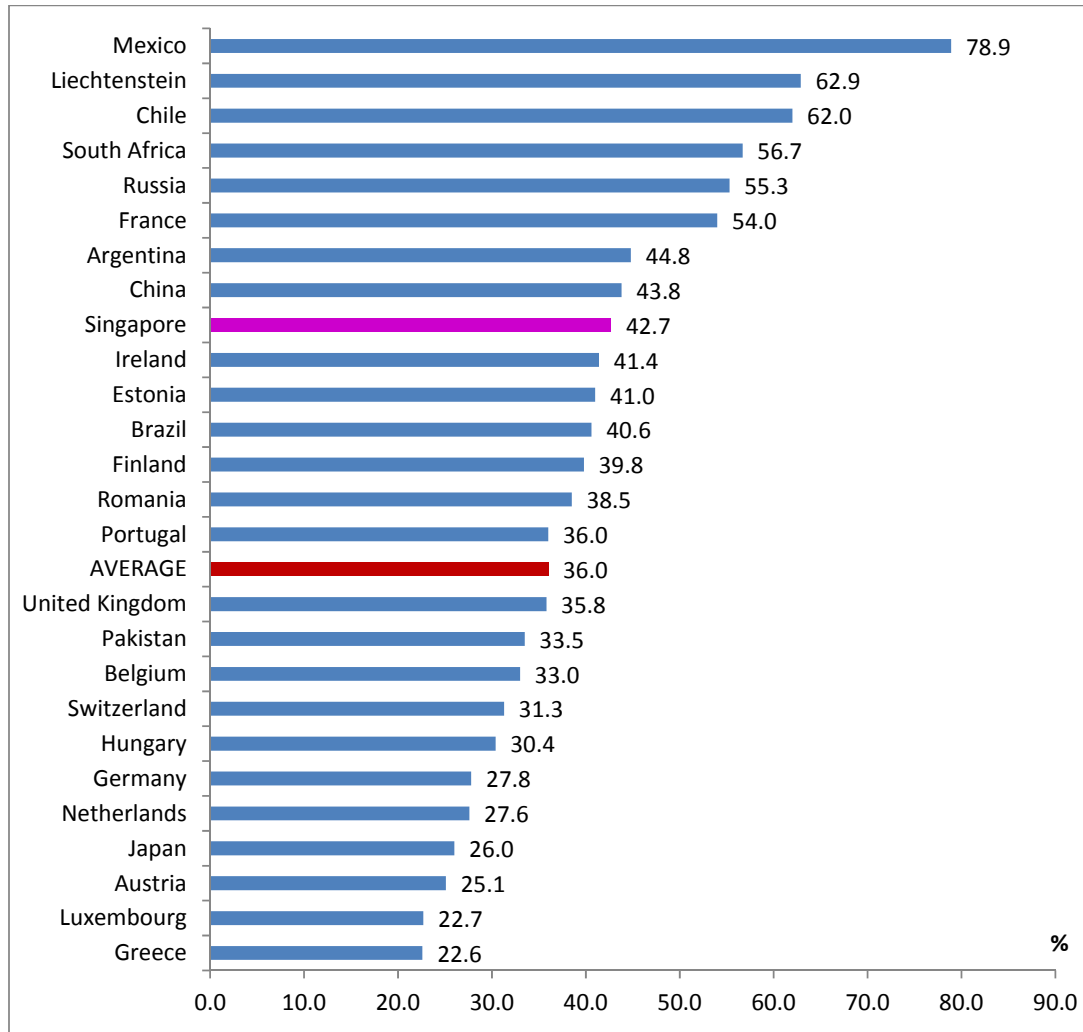


Percentage (%) of rating 5 or higher on 7 point scale where 1 = strongly disagree and 7 = strongly agree

Globally, favorable perceptions of the climate for entrepreneurship in IHLs range from 22.6% in Greece to 78.9% in Mexico (Figure 4.6). In Singapore, 42.7% of students agree that IHLs provide a favorable climate for them become entrepreneurs, higher than the global average of 36%. This ranked Singapore 9th out of 26 countries.

Figure 4.6: Perceptions of Climate for Entrepreneurship in IHLs: Global Comparisons across Countries

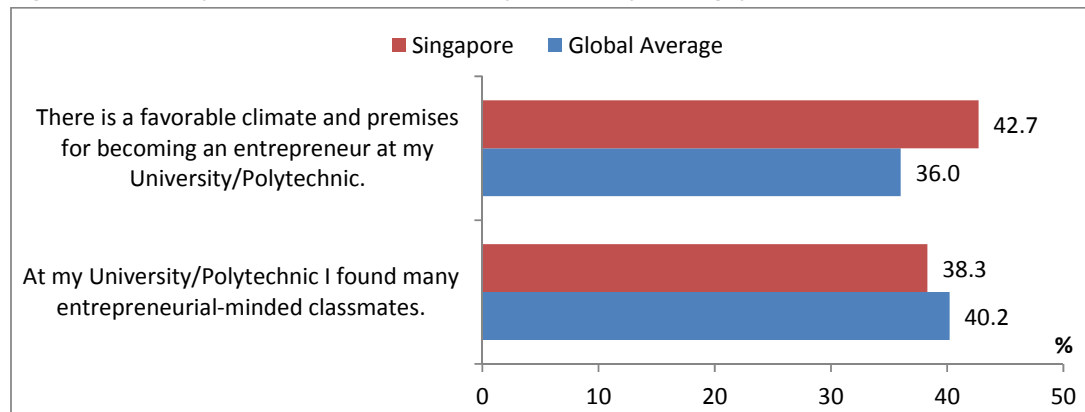
There is a favorable climate for becoming an entrepreneur in my university / polytechnic (% agreeing with this statement)



Percentage (%) of rating 5 or higher on 7 point scale where 1 = strongly disagree and 7 = strongly agree

In Singapore, only 38.3% of students believe that they have many entrepreneurial-minded classmates (**Figure 4.7**). This is slightly lower than the global average of 40.2%.

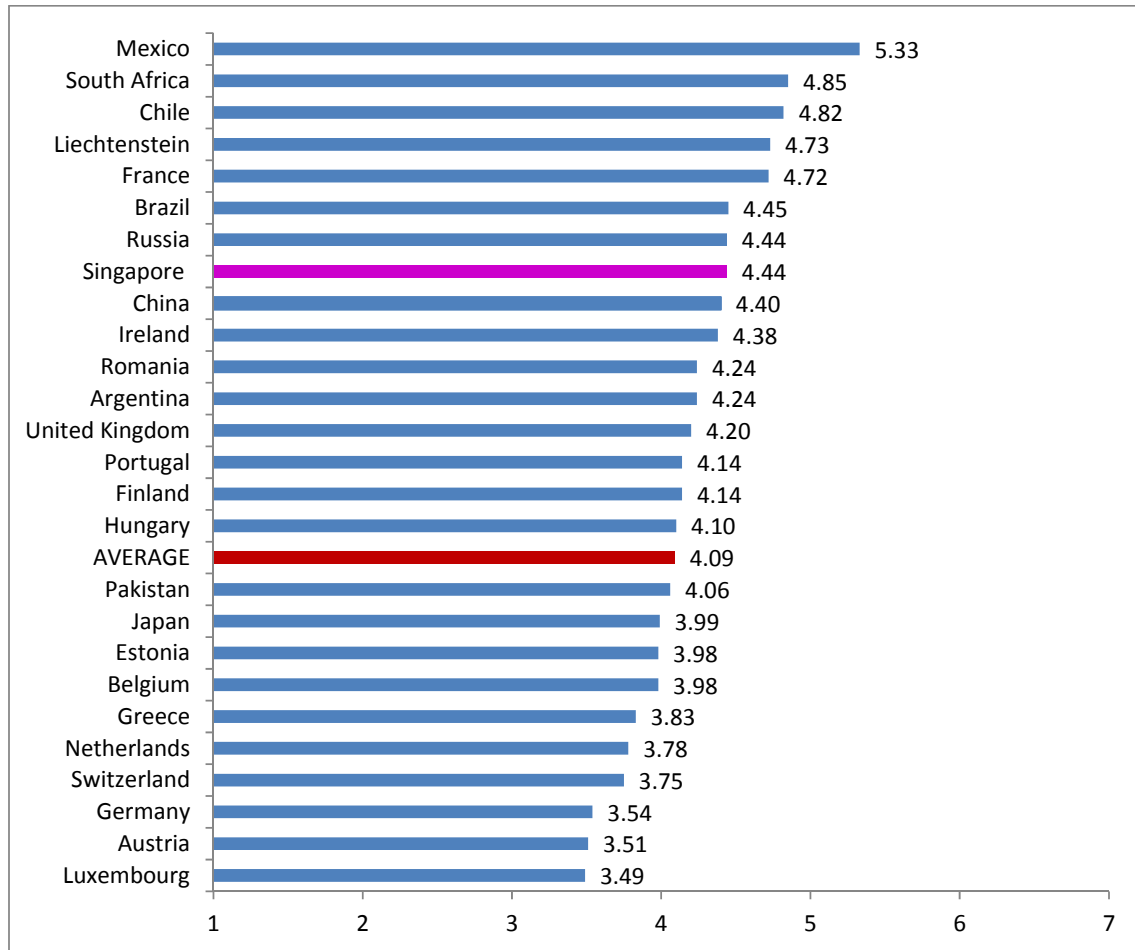
Figure 4.7: Perceptions of Climate for Entrepreneurship in Singapore IHLs



Percentage (%) of rating 5 or higher on 7 point scale where 1 = strongly disagree and 7 = strongly agree

Overall, the mean score for Singapore IHL's climate for fostering of entrepreneurship is 4.42, much higher than the global average of 4.09, ranking Singapore 8th out of 26 countries (Figure 4.8).

Figure 4.8: Evaluation of IHLs' Overall Climate for Fostering Entrepreneurship (Global Comparisons)



* Mean scores calculated on 7 point scale where 1 = strongly disagree and 7 = strongly agree. Reported score is the average across items in Figures 4.5 and 4.7.

5 PERSONAL CHARACTERISTICS AND BACKGROUND

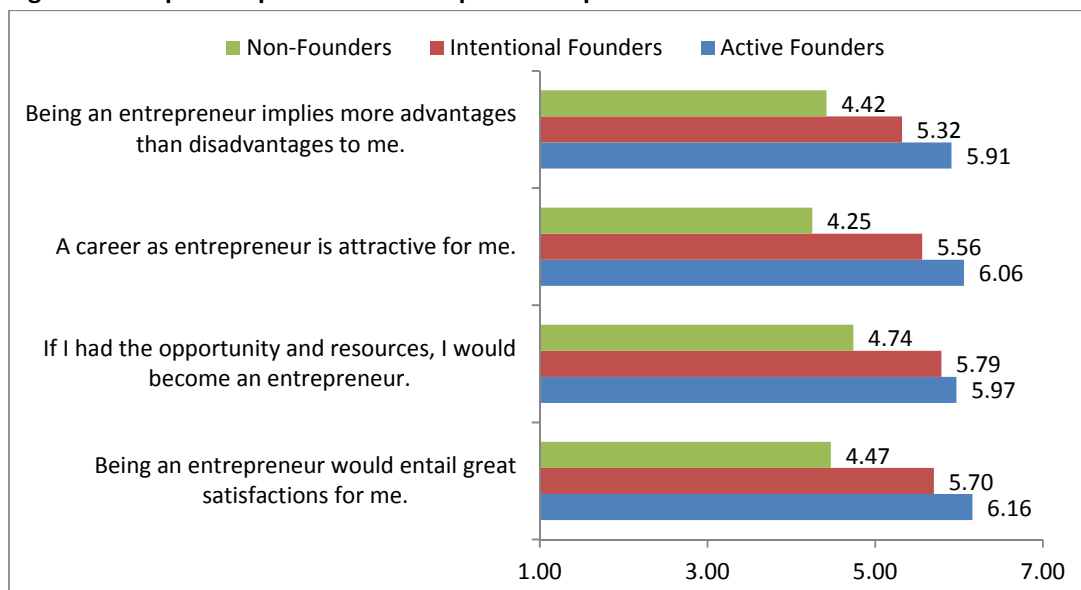
The GUESSS framework is premised on the theory of planned behavior (Ajzen, 2002) which describes how attitudes and beliefs translate into intention and behavior. Three types of beliefs form the basis of planned behavior: behavioral beliefs, normative beliefs and control beliefs. Behavioral beliefs address expected outcomes and are measured in the GUESSS framework by attitudes towards entrepreneurship. Normative beliefs refer to the perceived expectations of important referent individuals such as the person's spouse, family or friends. In the GUESSS framework, normative beliefs are measured by the importance placed by students on the opinions of parents, family and other important people in their lives. Control beliefs refer to the perceived presence of factors that may facilitate or impede planned behavior. In the GUESSS framework, control beliefs are measured by students' perceptions on various internal and external factors that control their careers and lives, including their own perceived competence.

This chapter examines the Singapore IHL students' impression of entrepreneurship, the influence of family background in entrepreneurship and, the competence and control over their entrepreneurial ventures.

5.1 Impression of Entrepreneurship among Singapore IHL Students

Students were asked on their implied impression on entrepreneurship; if entrepreneurship infers advantages or satisfactions, and the attractiveness of entrepreneurship as a career (**Figure 5.1**). Across the board, intentional founders and active founders reported significantly more favourable impressions of entrepreneurship compared to non-founders. However, there were no differences between university students compared to polytechnic students. Business students and non-business students also reported no difference in perceptions across the different groups of founding intentions.

Figure 5.1: Implied Impression on Entrepreneurship



Implied Impression rated on 7-Point Scale where 1 = strongly disagree and 7 = strongly agree

5.2 Influence of Family Background

Generally, Singapore IHL students placed significantly greater importance on the opinion of their parents or family members compared to the opinion of their friends or fellow students (**Table 5.1** and **Table 5.2**). However, across the different levels of interest in entrepreneurship, the students did not express any difference between the opinions of parents, friends or people important to them (**Table 5.1**).

The theory of planned behavior suggests that entrepreneurial intention will be shaped by how the students' parents, family and friends react to their entrepreneurship aspirations. It is expected that those students who face negative reactions from people close to them may be dissuaded from pursuing entrepreneurship. Conversely, students who receive positive reactions will be more likely to pursue entrepreneurship.

We observe from **Table 5.1** that those who are currently active entrepreneurs generally received the most positive reaction from the people close to them. Importantly, we found that students who are intentional founders receive significantly stronger positive reactions compared to those who have no intention to become entrepreneurs. When the reaction was examined based on their parents' entrepreneurship background, students whose parents have entrepreneurial experience in the past received significantly more positive reaction compared to those whose parents have no entrepreneurial experience (**Table 5.2**).

Table 5.1: Importance of Opinion and Reaction to Entrepreneurship Aspiration of Singapore IHL Students (by Interest in Entrepreneurship)

Importance of Opinion and Reaction to Entrepreneurship Aspiration Rated on Likert Scale (1 – 7)	Importance of Opinion (1 = Not at all, 7 = Very Important)			Reaction to Entrepreneurship Aspiration (1 = Very Negative, 7 = Very Positive)		
	Non-Founders (n=224)	Intentional Founders (n=235)	Active Founders (n=7)	Non-Founders (n=1687)	Intentional Founders (n=955)	Active Founders (n=25)
Parents / other family members	5.70	5.77	5.38	5.15	5.61**	5.63
Friends / fellow students	5.05	5.03	4.81	5.13	5.47**	5.59
People important to me in general	5.46	5.56	5.25	5.20	5.64**	5.75

*Significant at 10%; **Significant at 5%

Table 5.2: Importance of Opinion and Reaction to Entrepreneurship Aspiration of Singapore IHL Students (by Parents' Entrepreneurship Background)

Importance of Opinion and Reaction to Entrepreneurship Aspiration Rated on Likert Scale (1 – 7)	Importance of Opinion (1 = Not at all, 7 = Very Important)			Reaction to Entrepreneurship Aspiration (1 = Very Negative, 7 = Very Positive)		
	Parents are not entrepreneurs	Parents were entrepreneurs in the past	Parents currently entrepreneurs	Parents are not entrepreneurs	Parents were entrepreneurs in the past	Parents currently entrepreneurs
Parents / other family members	5.70	5.79	5.67	5.21	5.61**	5.35
Friends / fellow students	5.04	5.05	4.96	5.22	5.36**	5.29
People important to me in general	5.49	5.52	5.48	5.30	5.53**	5.43

*Significant at 10%; **Significant at 5%

5.3 Perception of Control

Singapore IHL students with strongest entrepreneurial interest show stronger confidence in their own ability to control their own decisions and direction (as measured by Control by Self). In addition, they are less likely to submit to the control by others (as measured by Control by External Forces and Control by Other Parties) (Table 5.3).

While intentional and active founders generally downplay the role of luck and fortune, they believe that "what is going to happen will happen." This findings suggest that students with strong entrepreneurial spirit tend to see their planned careers as entrepreneurs as "meant to be". As a result, they may also be more prepared for potential successes or failures.

Table 5.3: Character of Founding Intention

Character of Founding Intention Rated on 7-point Scale (1 = strongly disagree, 7 = strongly agree)	Non-Founders (n=1911)	Intentional Founders (n=1190)	Active Founders (n=32)
Control by External Forces			
When I get what I want, it is usually because I am lucky.	4.01	4.05	3.65
I have often found that what is going to happen will happen.	4.50	4.74	4.81**
It is not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.	4.17**	4.16	3.45
Control by Other Parties			
My life is chiefly controlled by powerful others.	3.44	3.58*	3.26
I feel like what happens in my life is mostly determined by powerful people.	3.50	3.61	3.10
In order to make my plans work, I make sure that they fit in with the desires of people who have power over me.	3.86	4.04**	3.77
Control by Self			
I am usually able to protect my personal interests.	4.96	5.15	5.35**
When I make plans, I am almost certain to make them work.	4.90	5.30	5.61**
I can pretty much determine what will happen in my life.	4.41	4.92	5.45**

*Significant at 10%; **Significant at 5%

5.4 Entrepreneurial Self-Efficacy (Perception of Own Competence)

In Singapore, the entrepreneurially-oriented students displayed significantly greater belief in their own competence in various areas, in particular those related to innovation (eg. generate new ideas, develop new products) and risk management (**Table 5.4**). The perception of own competence is especially strong among the active founders where they rated their competence across all areas above 5 on the 7-point scale.

Table 5.4: Competence by Founding Intention

Competence rated on 7-point Scale (1=completely unsure, 7=completely sure)	Non-Founders (n=1911)	Intentional Founders (n=1190)	Active Founders (n=32)
Establish and achieve goals and objectives	5.14	5.52	5.75**
Generate new ideas	4.78	5.34	5.53**
Develop new products and services	4.33	5.09	5.58**
Perform financial analysis	4.32	4.99	5.00**
Reduce risk and uncertainty	4.55	5.06	5.16**
Take calculated risks	4.56	5.17	5.41**
Make decisions under uncertainty and risk	4.51	5.16	5.34**
Manage time by setting goals	4.91	5.40	5.53**
Take responsibility for ideas and decisions	5.25	5.64	5.84**
Start my own firm	3.68	5.17	6.16**
Lead my own firm to success	3.94	5.27	5.94**

*Significant at 10%; **Significant at 5%

Among the intentional founders, there were no significant differences in their self-perceived competence regardless of the level of their study (**Table 5.5**). Comparing business and non-business students, the areas of difference are financial analysis and responsibility for ideas and decisions, where business students rated their competence significantly higher than non-business students.

Table 5.5: Competence of Intentional Founders by Type of Course and Level of Study

Competence rated on 7-point Scale (1=completely unsure, 7=completely sure)	Type of Course		Level of Study		
	Business	Non Business	University Postgraduate	University Undergraduate	Polytechnic
Establish and achieve goals and objectives	5.61	5.50	5.47	5.55	5.51
Generate new ideas	5.35	5.34	5.33	5.32	5.35
Develop new products and services	5.09	5.09	5.23	4.98	5.12
Perform financial analysis	5.17**	4.94	4.94	4.79	5.07
Reduce risk and uncertainty	5.13	5.04	5.03	4.91	5.12
Take calculated risks	5.26	5.15	5.23	5.12	5.19
Make decisions under uncertainty and risk	5.24	5.14	5.24	5.19	5.13
Manage time by setting goals	5.52	5.37	5.18	5.35	5.43
Take responsibility for ideas and decisions	5.83**	5.59	5.56	5.69	5.62
Start my own firm	5.24	5.15	5.08	5.12	5.20
Lead my own firm to success	5.40	5.23	5.09	5.20	5.30

*Significant at 10%; **Significant at 5%

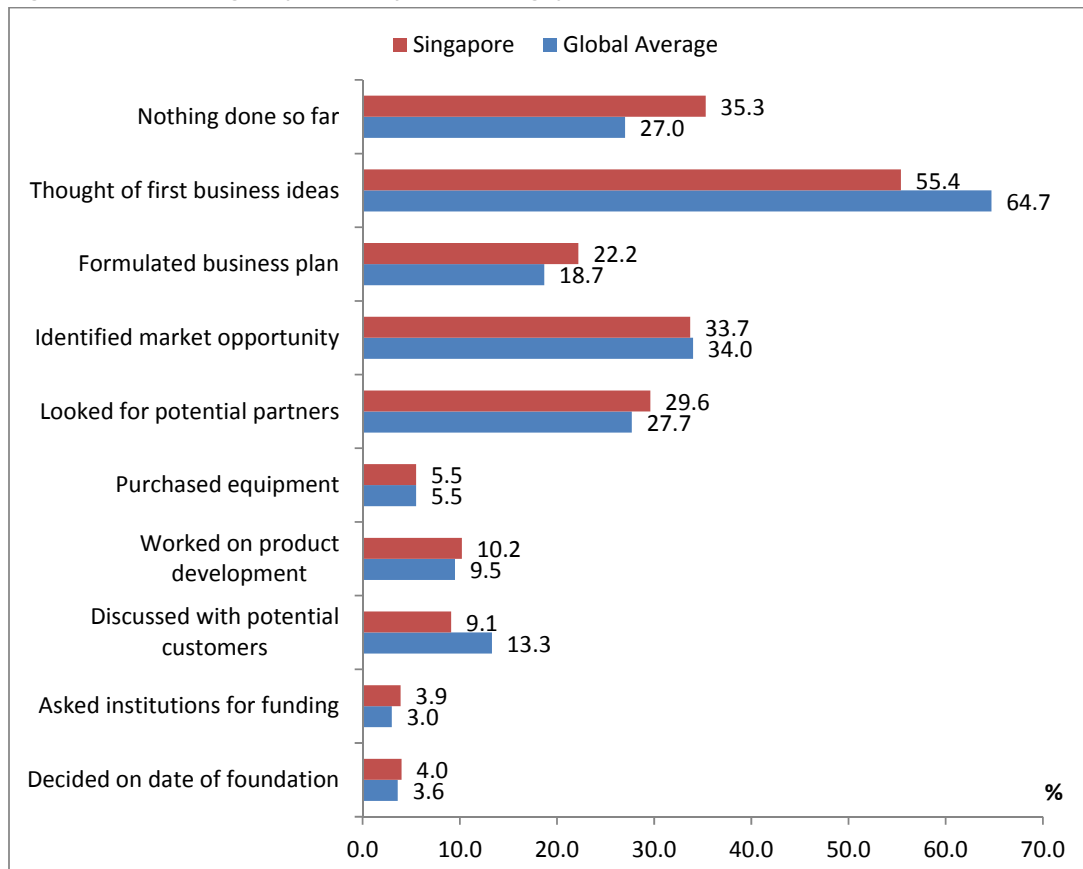
6 INTENTIONAL FOUNDERS

To understand the intentional founders in greater detail, the students who have indicated their intentional entrepreneurial interest were given an additional set of questions specifically on their entrepreneurial intentions.

6.1 Steps Already Taken

More than half of the Singapore intentional founders have thought of their first business ideas (Figure 6.1). This is lower than the global average of 64.7%. However, entrepreneurially oriented students in Singapore IHLs have taken more advanced, concrete steps to realize their entrepreneurial intentions compared to students in other countries. 3.9% of Singapore intentional entrepreneurs have approached potential funding sources (compared to the global average of 3%) and 10.2% have developed a product (compared to 9.5%).

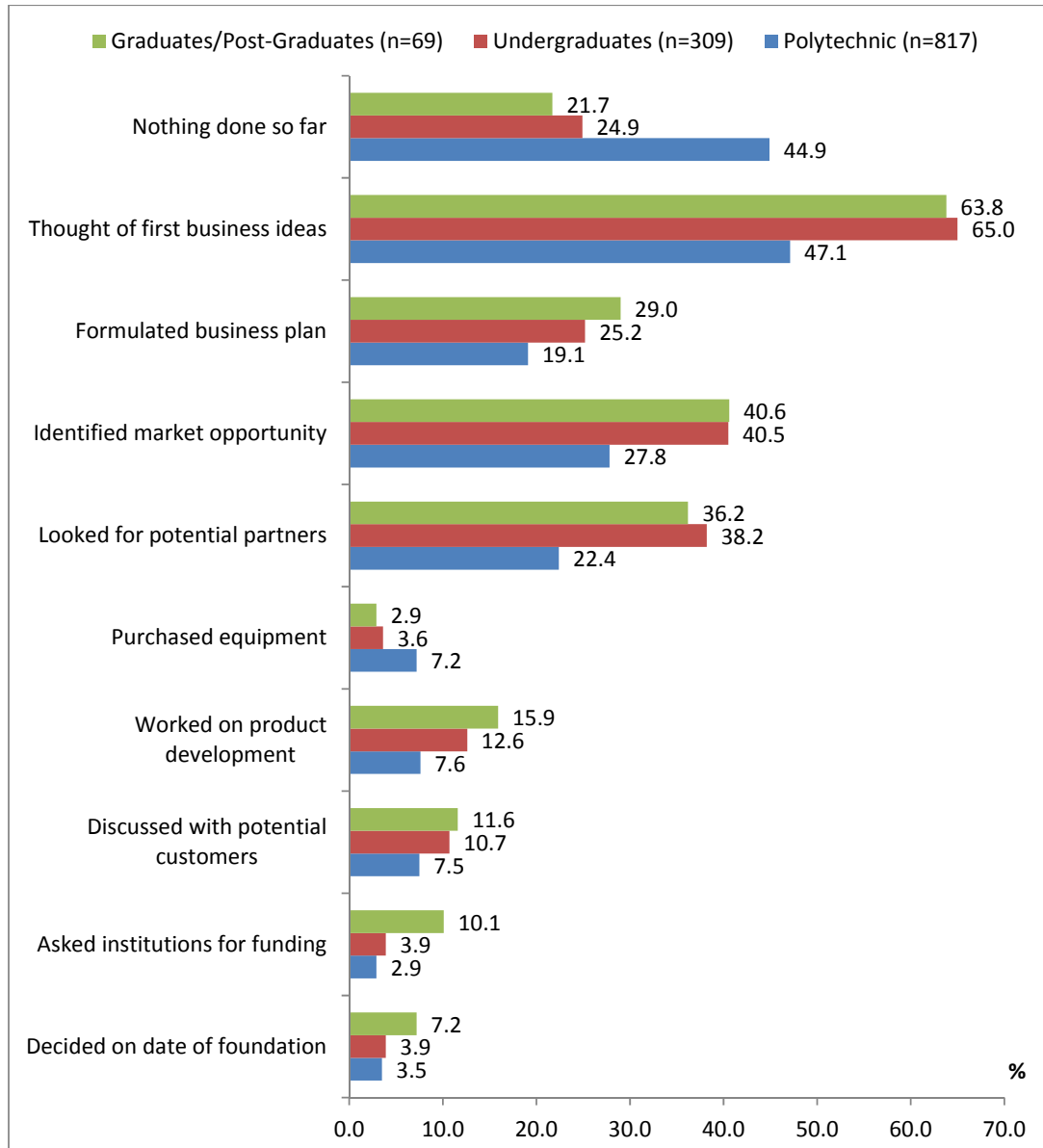
Figure 6.1: Founding Steps Already Taken, Singapore versus Global



More than two-third of the intentional entrepreneurs who are doing their undergraduate and post-graduate studies have already thought of their first business ideas. In contrast, less than half of those in polytechnic had done so (Figure 6.2).

The university graduate students were also ahead of the undergraduates and polytechnic students in their involvement in the later stage of founding process. There are also significantly larger proportions of graduate students who have approached institutions for funding as well as decided on a date of foundation.

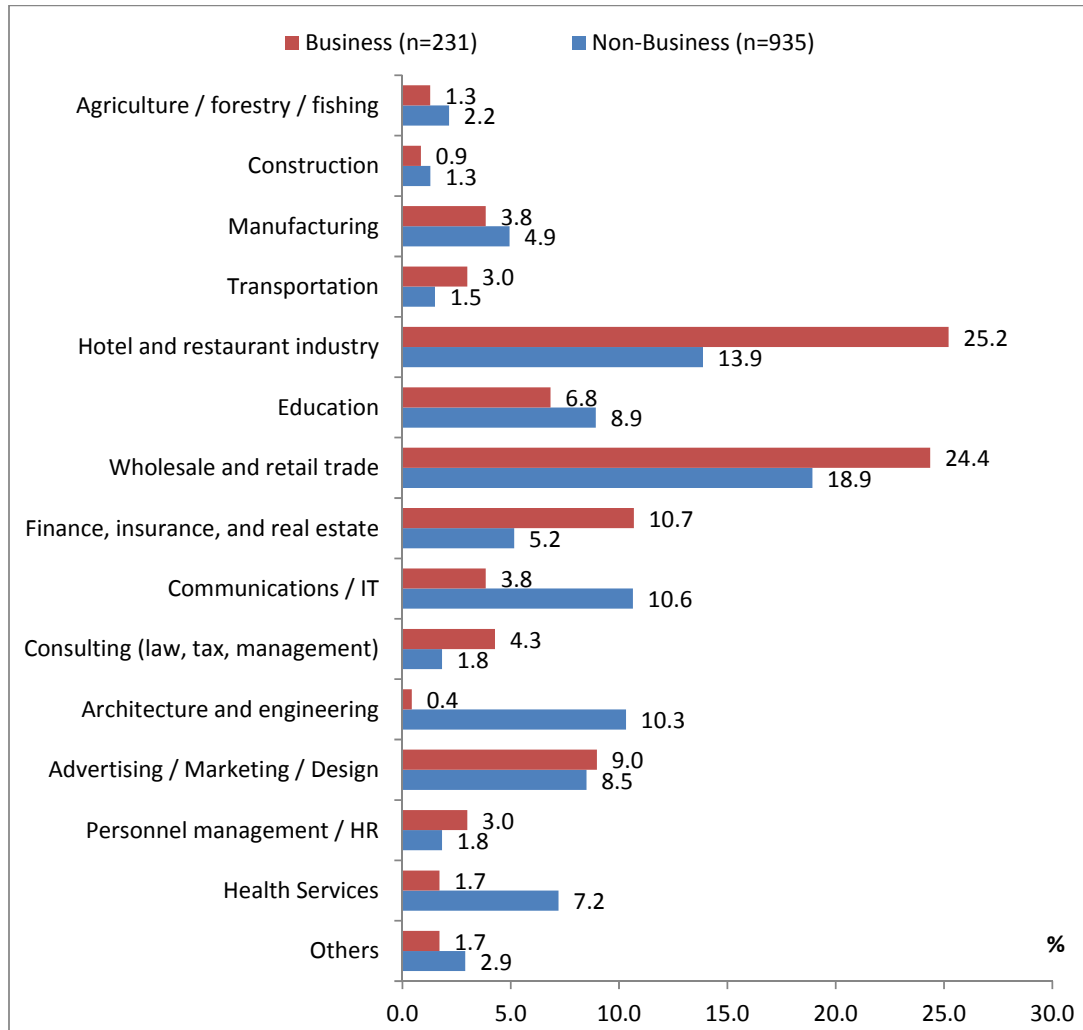
Figure 6.2: Founding Steps Already Taken, by Level of Study



6.2 Industrial Sector

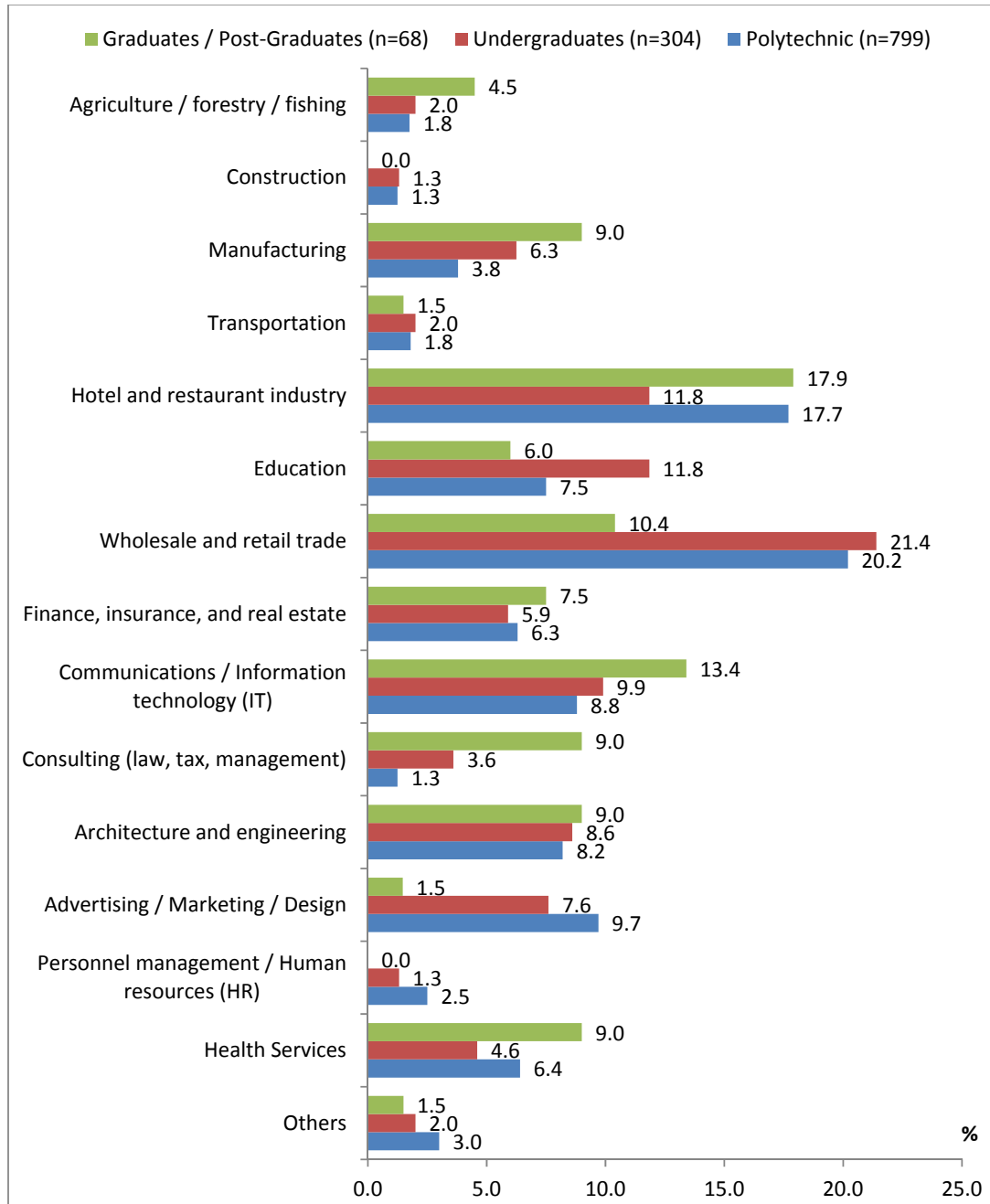
For the intentional founders from both the business and non-business schools, the top two sectors of choice are hospitality and wholesale / retail trade (**Figure 6.3**). The intentional founders from non-business school have higher propensity to start their new business in ICT (10.6% for non-business students compared to 3.8% for business students) and architecture / engineering sectors (10.3% for non-business students compared to 0.4% for business students) compared to business students.

Figure 6.3: Intended Industrial Sector of New Venture (Business versus Non-Business)



The intentional founders in graduate study are mainly interested in the hospitality sector while undergraduates and polytechnic students prefer wholesale / retail trade for their new ventures (Figure 6.4). Furthermore, the graduates reported higher propensity to start businesses in consultancy, ICT, manufacturing and health services sectors compared to undergraduates and polytechnic students.

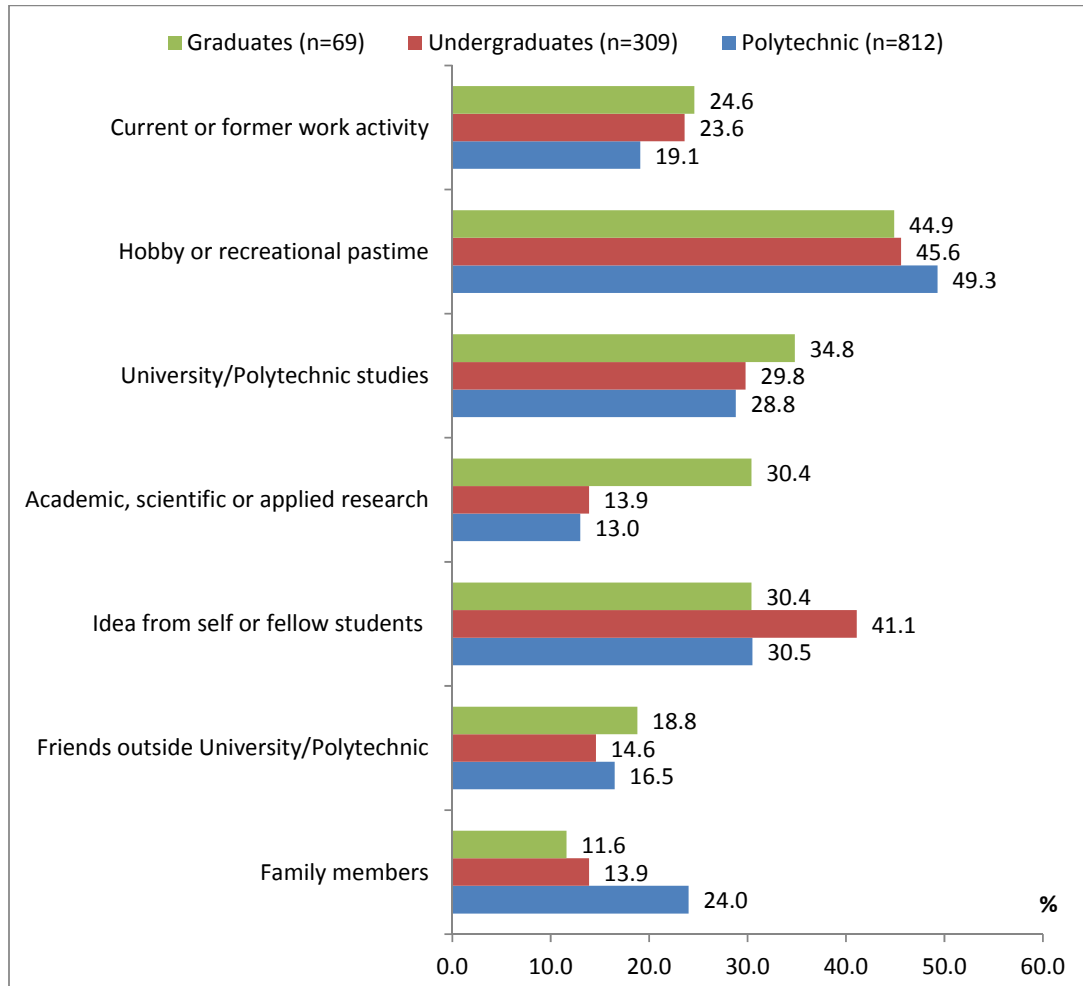
Figure 6.4: Intended Industrial Sector of New Venture (by Level of Study)



6.3 Founding Idea

The IHL is an important source of business ideas for students. Almost one-third of the intentional founders attributed their studies as source of their founding idea. The proportion is especially high for polytechnic students where 34.8% of them indicated that their business ideas came from their polytechnic studies (Figure 6.5). Among university graduates / postgraduates, the research conducted at IHLs provided the business ideas for almost one-third of the intentional founders.

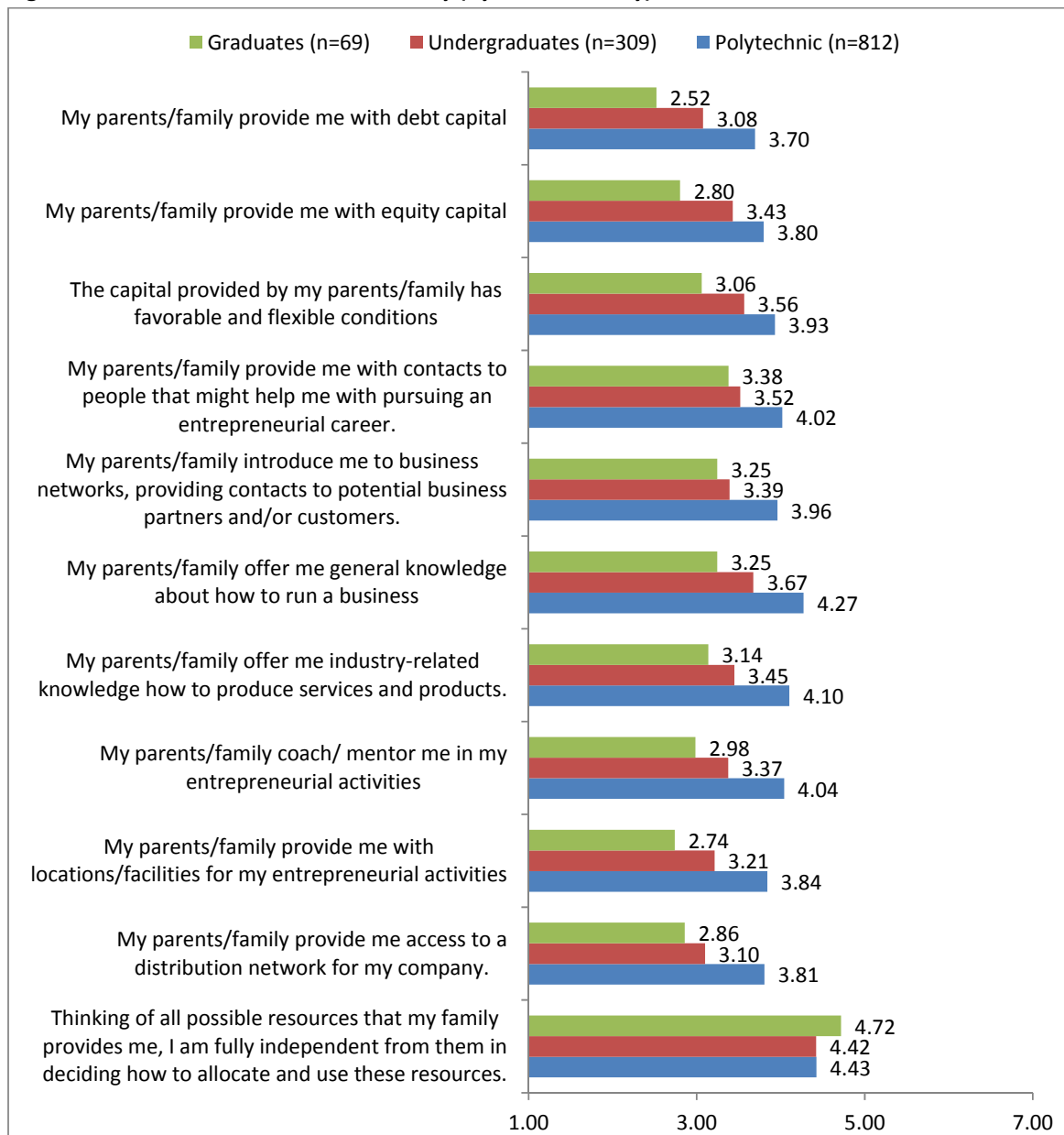
Figure 6.5: Source of founding idea in Singapore (by Level of Study)



6.4 Founding Resources

Across all the various resource support sources, polytechnic students are most dependent on their family members (Figure 6.6). Relative to other students, the graduates / post-graduates from university are the most independent with the lowest level of resource support by their parents / family.

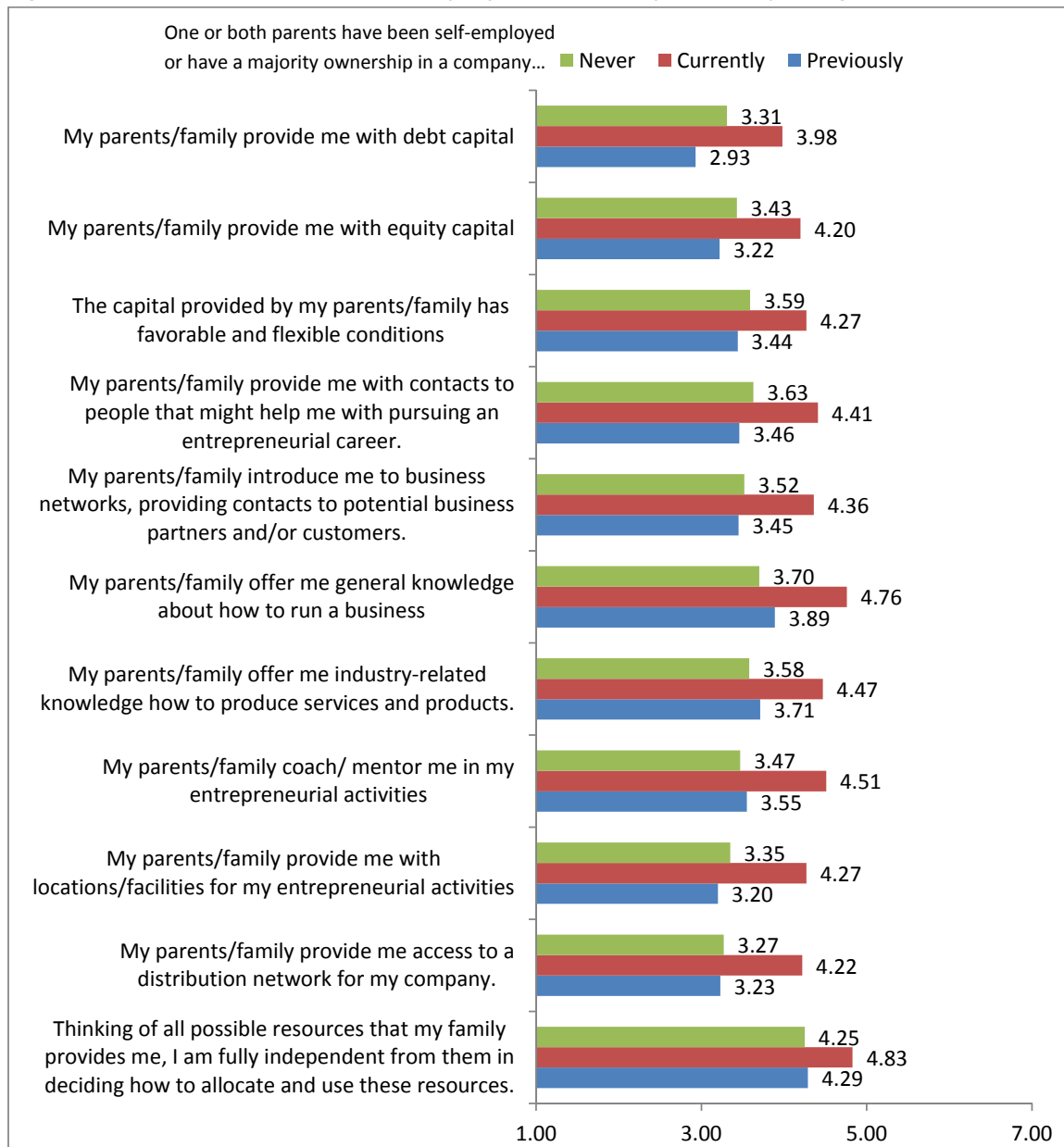
Figure 6.6: Resources from Parents/Family (by Level of Study)



Family's support rated on 7-point scale where 1 = not at all and 7 = very much

Among the intentional founders, those with parents who are currently active entrepreneurs are most reliant on their parents for a variety of support (Figure 6.7).

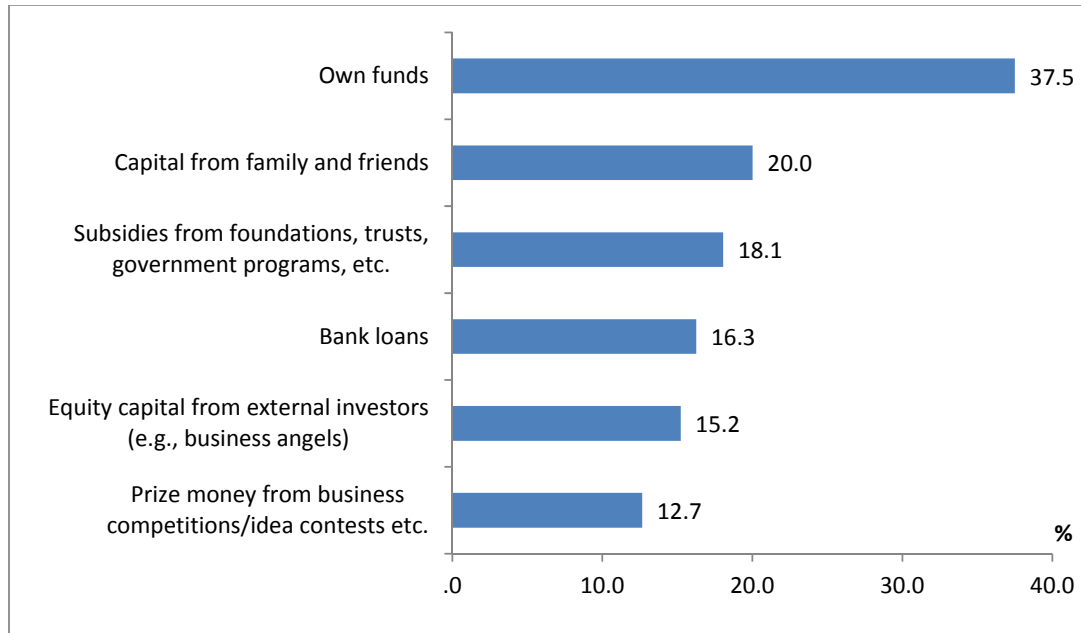
Figure 6.7: Resources from Parents/Family (by Parents' Entrepreneurship background)



Family's support rated on 7-point scale where 1 = not at all and 7 = very much

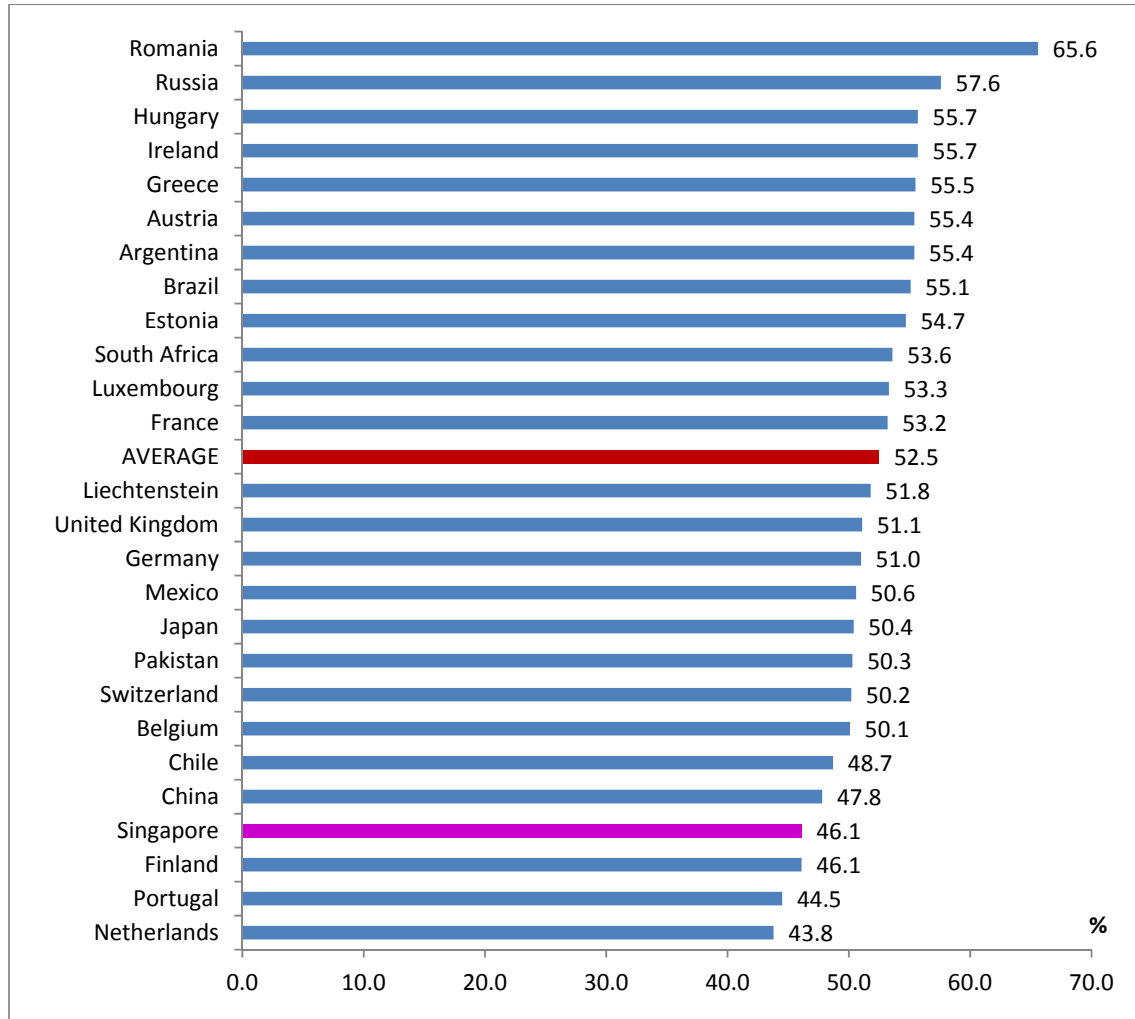
Intentional founders will largely rely on their own funds and capital obtained from their family and friends to finance their proposed new business (**Figure 6.8**). External funding will constitute only a small share of financing sources. In the average new firm to be founded by an intentional entrepreneur, only 15.2% of funding will be in the form of equity funding from external investors and 16.3% will take the form of bank loans.

Figure 6.8: Sources of Finance (Estimated Share in Total Funding)



Time is usually among the most limited resource for the intentional entrepreneurs. In Singapore, the estimated weekly working time to be invested in the new business is among the lowest (46.1%, ranks 23rd out of 26 countries). However, this might be explained by the larger founding teams in Singapore, as will be shown in the next section.

Figure 6.9: Average Weekly Working Time to be invested in the New Venture



6.5 Founding Team

Compared to other countries, Singapore students are more likely to found business in a team rather than as a sole entrepreneur, with an average of 1.4 founding partners (**Figure 6.10**). The founding partners will be recruited both from the circle of friends outside the IHLs (64.7%) and within the IHLs (57.7%) (**Figure 6.11**).

Figure 6.10: Average Number of Intended Founding Partners by Country

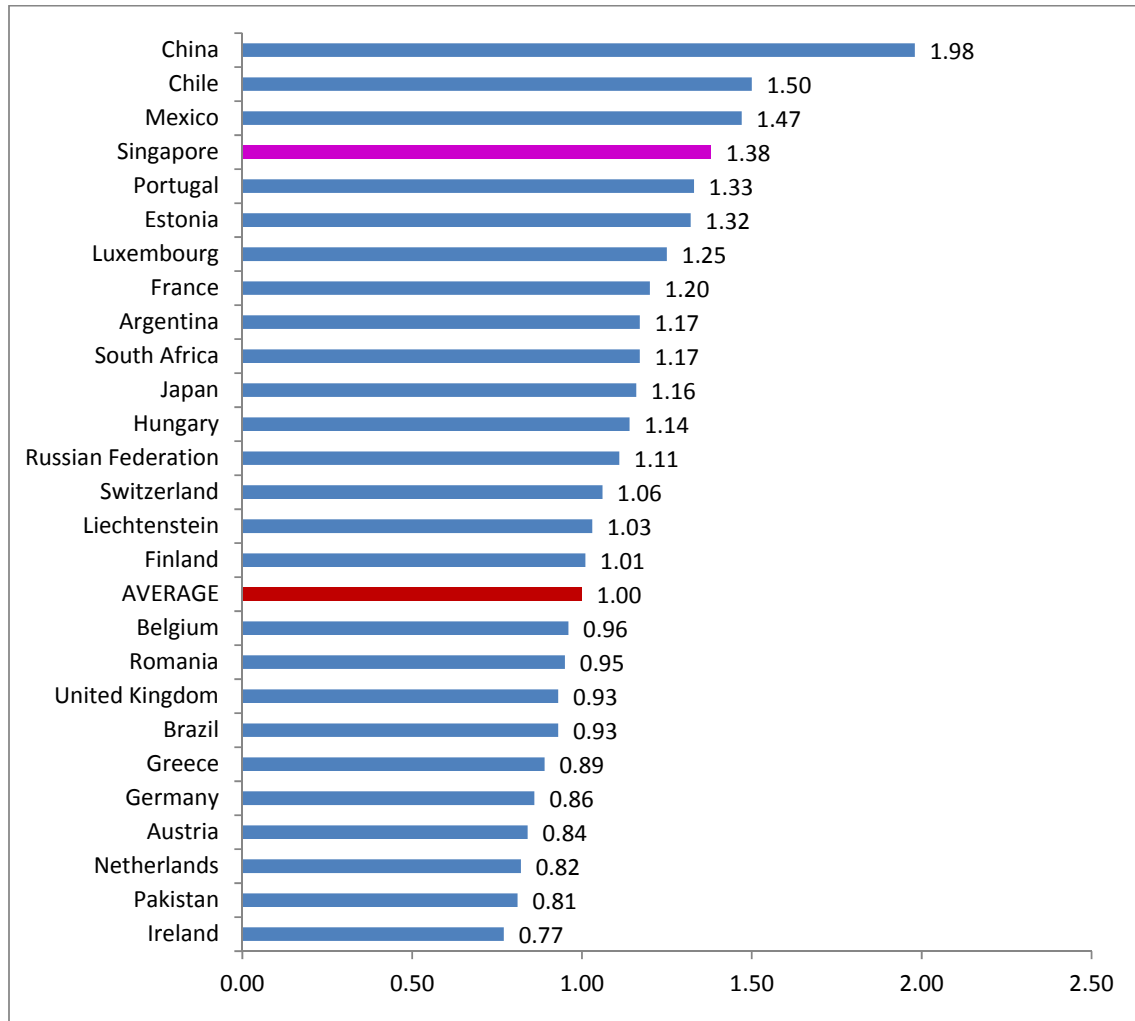
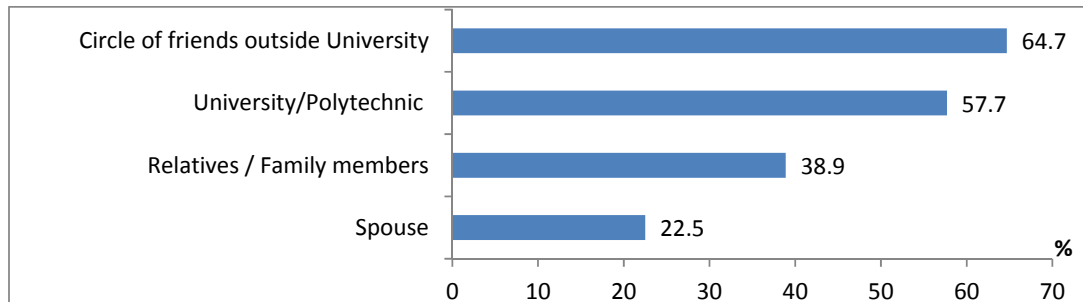


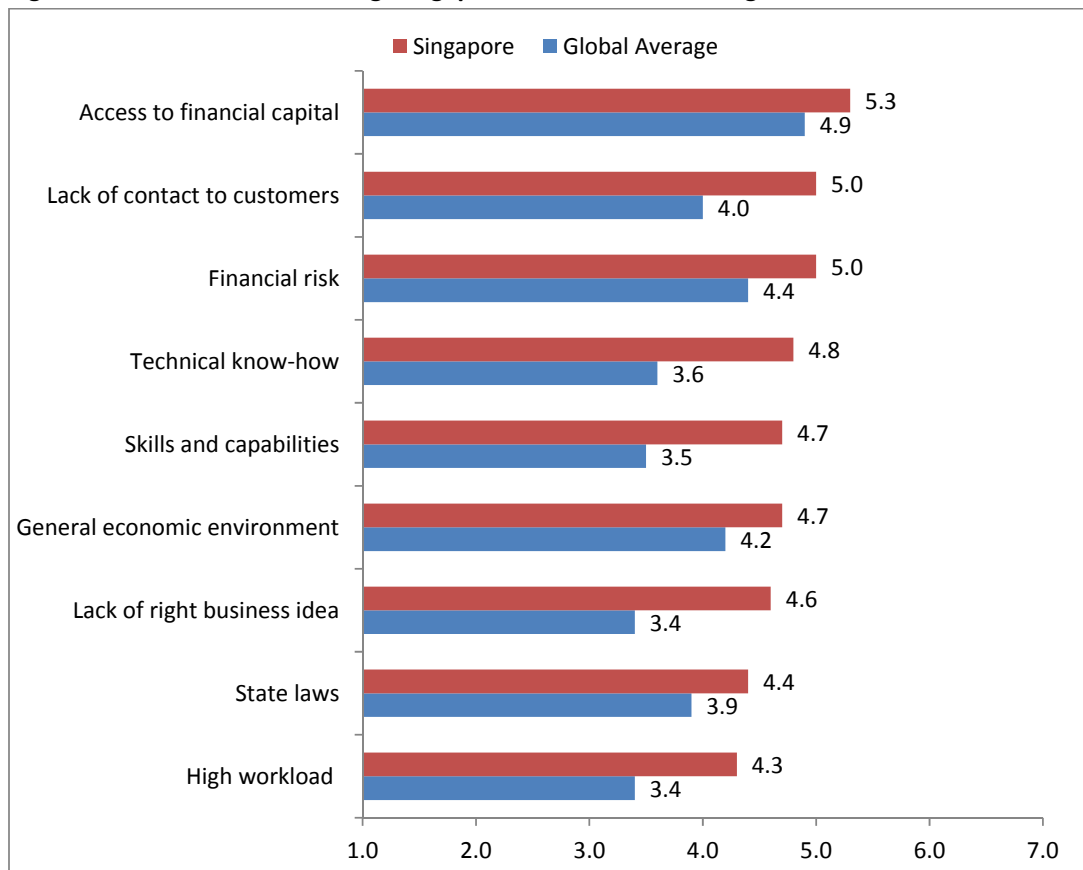
Figure 6.11: Recruitment Source of Intended Founding Partners



6.6 Barriers Faced

The intentional founders from Singapore reported financial-related factors (mean of 5.3 for access to financial capital and 5.0 for financial risk) as their most significant barriers to founding a company (Figure 6.12). They were also concerned about the lack of contact to customers and lack of technical know-how.

Figure 6.12: Barriers to Founding, Singapore versus Global Average



Barrier to founding rated on 7-point scale where 1 = not at all and 7 = very much

7 ACTIVE ENTREPRENEURS

The students who are active in their own founded business were asked an additional set of questions so as to understand their entrepreneurial experience in greater detail.

7.1 Characteristics of New Businesses

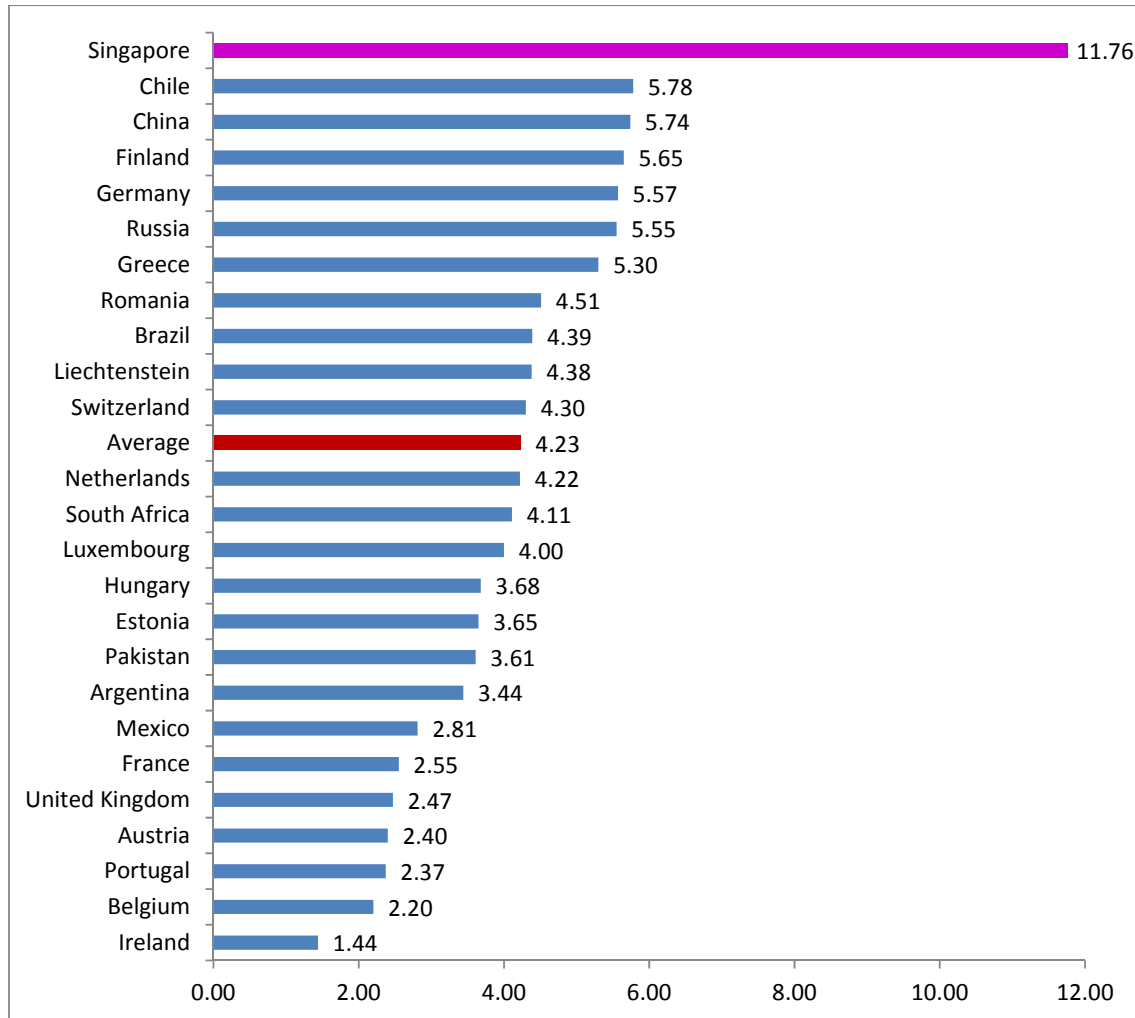
In Singapore, a small proportion, 1% (n=32) of the university / polytechnic students indicated that they are currently active in their own business. The following table shows an overview of the businesses comparing to other countries (**Table 7.1**). Globally, IHL students founded their new venture with approximately two other partners and hold the majority of the ownership of their business (68.7% of equity capital on average). However, Singapore active founders have more than 2 partners on average and hold only 52.1% of the equity capital in the venture.

Table 7.1: Characteristics of Students' New Ventures

Country	No. of Founding Partners	Share of personal equity (%)	No. of employee today	No. of employees planned in 5 years	Growth factor
Global average	1.90	68.68	3.02	12.78	4.23
Singapore	2.40	52.09	2.80	32.88	11.76
Argentina	2.10	68.58	3.15	10.83	3.44
Austria	1.57	80.23	1.99	4.77	2.40
Belgium	2.00	56.67	1.67	3.67	2.20
Brazil	2.04	65.52	4.58	20.11	4.39
Chile	2.44	51.20	3.92	22.64	5.78
China	3.17	35.00	10.00	57.40	5.74
Estonia	2.13	66.50	1.95	7.12	3.65
Finland	2.16	63.23	1.41	7.96	5.65
France	2.05	68.85	4.35	11.10	2.55
Germany	1.58	76.72	0.90	5.01	5.57
Greece	1.71	75.38	2.29	12.14	5.30
Hungary	1.79	71.77	2.88	10.59	3.68
Ireland	1.44	91.43	6.88	9.88	1.44
Liechtenstein	2.40	48.50	7.60	33.30	4.38
Luxembourg	1.50	80.75	0.50	2.00	4.00
Mexico	2.46	54.71	7.81	21.91	2.81
Netherlands	1.72	68.26	1.81	7.63	4.22
Pakistan	1.57	100.00	9.00	32.50	3.61
Portugal	2.26	61.00	2.69	6.38	2.37
Romania	2.03	61.96	2.86	12.89	4.51
Russia	2.62	61.71	5.71	31.67	5.55
South Africa	1.76	61.56	4.93	20.27	4.11
Switzerland	1.99	65.04	2.14	9.20	4.30
United Kingdom	1.49	82.55	5.28	13.04	2.47

The new businesses founded by Singapore students' have an average of almost 3 employees today. The students plan to expand employment to an average of 33 employees in 5 years' time; growing their business by a factor of 11.76. This is far higher than the global average of 4.23 and places Singapore at top of the chart in terms of self-reported growth factor across 26 countries (**Figure 7.1**). The countries with the next highest growth factors are Chile (5.78) and China (5.74). The extremely high expected growth reported by Singapore's active student entrepreneurs reflect optimism and ambitious aspirations. However, high expectations may not always translate into actual performance as many external factors influence the growth of early-stage ventures.

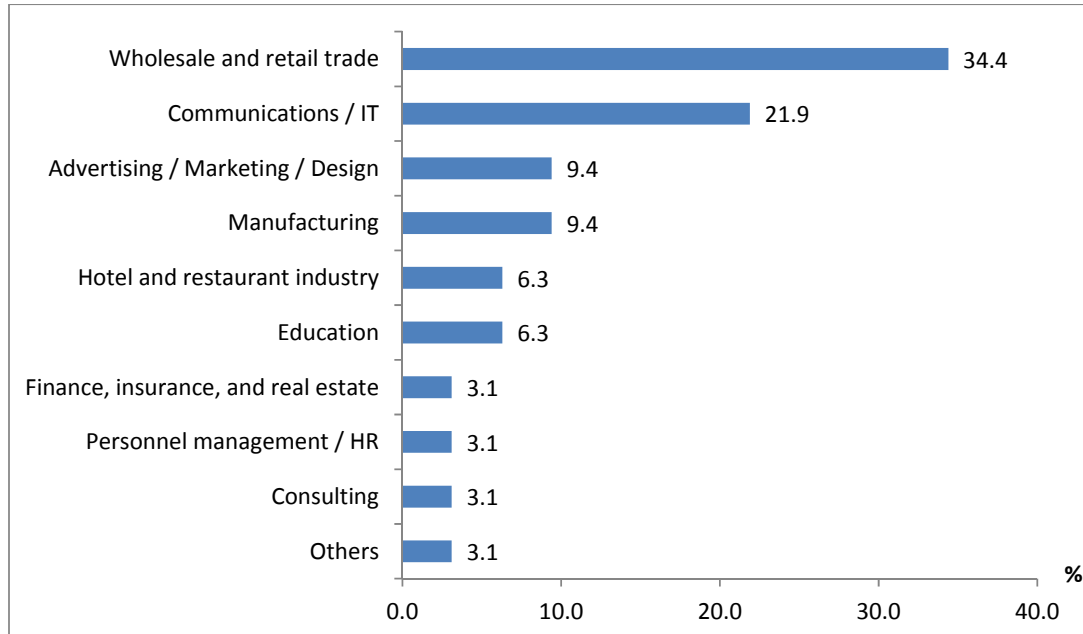
Figure 7.1: Intended Growth Factors of Existing Ventures across Country



7.2 Industrial Sector

Among the active entrepreneurs from Singapore, the top two sectors of choice are wholesale / retail trade (34.4%) and ICT (21.9%) (Figure 7.2).

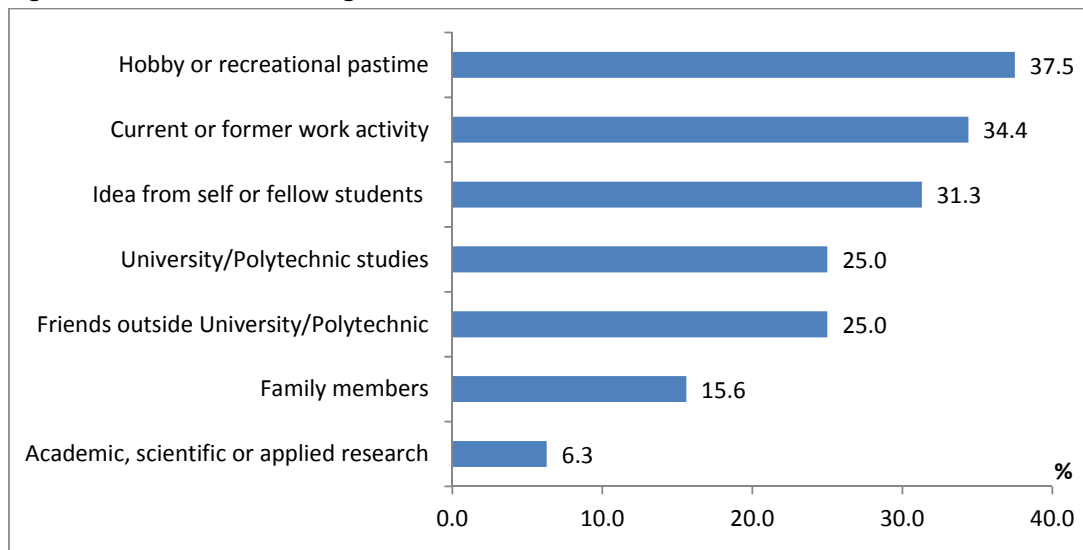
Figure 7.2: Industrial Sector of Active Student Ventures



7.3 Founding Idea

25% of the active founders credited their IHLs studies as a source of founding ideas, while only 6.3% of them indicated that their research at IHLs provided their business ideas (Figure 7.3).

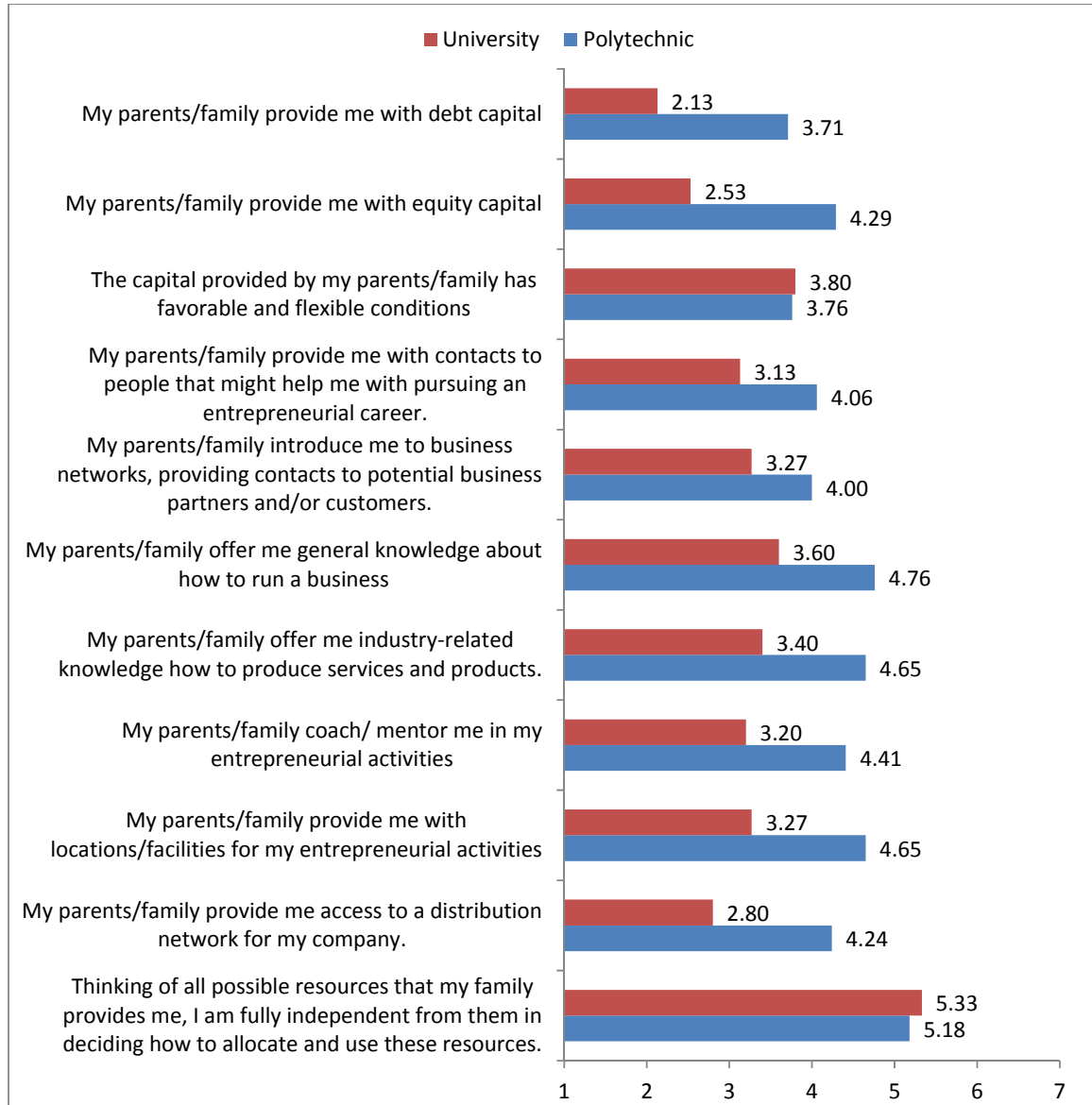
Figure 7.3: Source of Founding Idea



7.4 Founding Resources

The active entrepreneurs from university are relatively less dependent on their parents / family across various areas compared to entrepreneurs from polytechnics (Figure 7.4).

Figure 7.4: Resources from Parents/Family

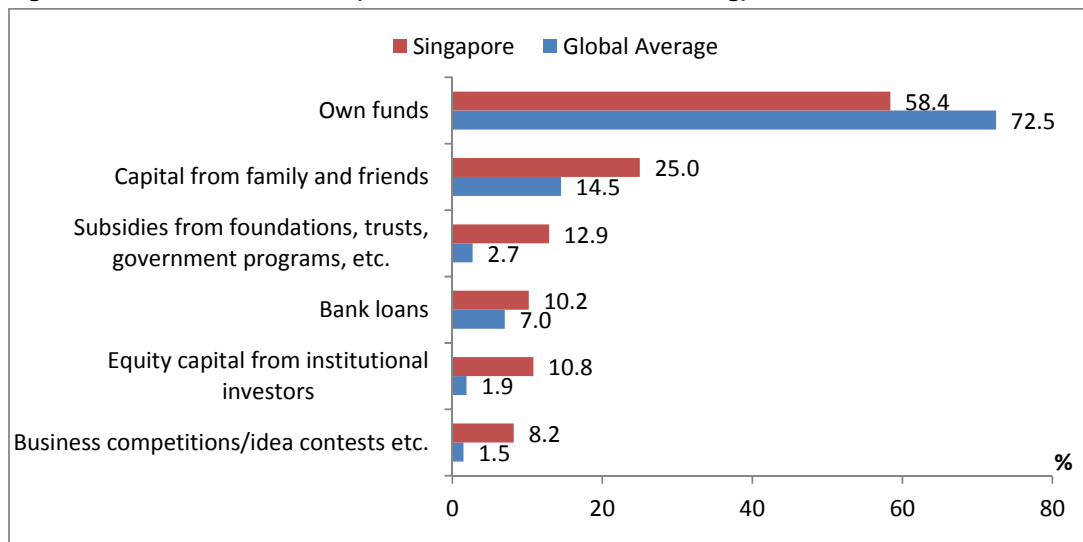


Family's support rated on 7-point scale where 1 = not at all and 7 = very much

In Singapore, more than half the financing of new student-owned businesses came from the founders' own funds (**Figure 7.5**). Capital from family and friends account for another quarter. Equity capital from external parties and bank loans collectively contribute around 20% of the funds of the average entrepreneurial firm founded by Singapore IHL students. Globally, 72.5% of the new business funds were from the founders' funds, and another 14.5% of the capital were from their family and friends.

Globally, an average 1.9% of the funds are equity capital from institutional investors. This is significantly lower than Singapore where 10.8% of the funds are from institutional investors. In addition, winnings from business competitions or idea contests made up only 1.5% of the funds at global level; in contrast, they are accounted for 8.2% of the funds in Singapore. These findings point to the developed systems and infrastructures for entrepreneurship support in Singapore's IHLs, relative to many other countries in the world.

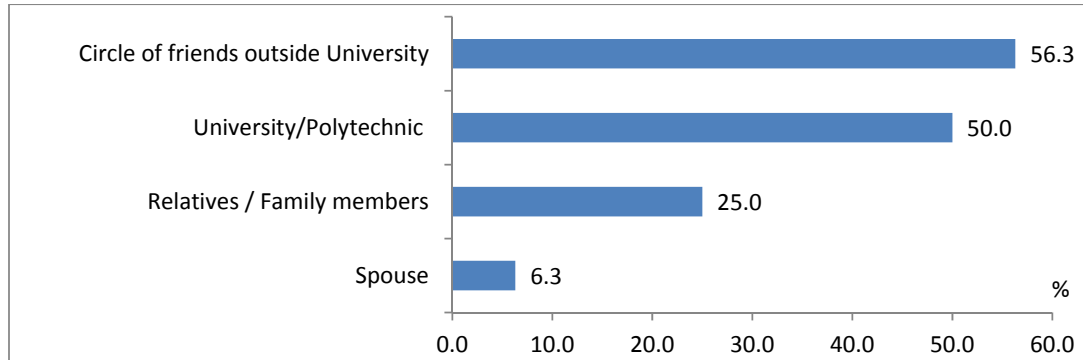
Figure 7.5: Sources of Finance (Estimated Share in Total Funding)



7.5 Founding Partner

The founding partners were mainly recruited from the circle of friends outside (56.3%) and within (50%) the IHLs (Figure 7.6).

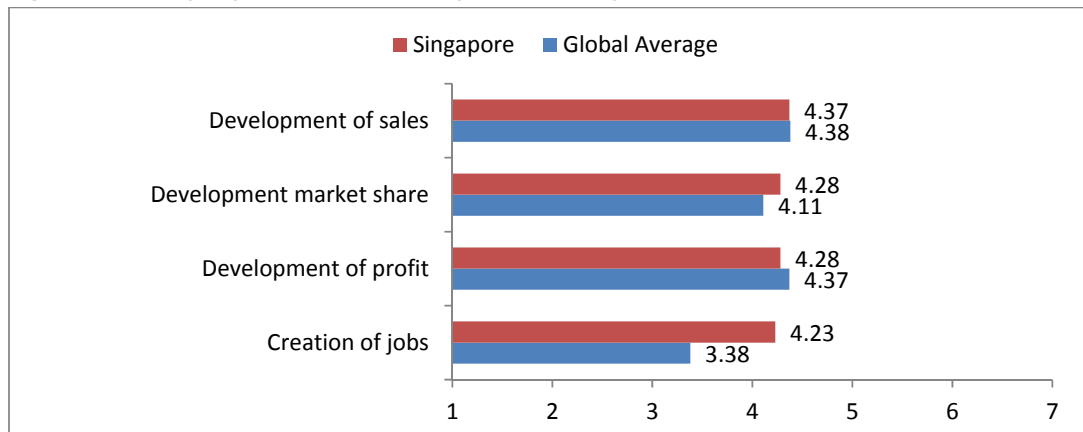
Figure 7.6: Recruitment Source for Founding Partners



7.6 Company Performance

The businesses founded by the student entrepreneurs from Singapore IHLs have performed about equally as well as their competitors in terms of sales, market share, profits and job creation (Figure 7.7). Relatively, Singapore firms performed slightly better than the global average in terms of market share (4.28 on a 7 point scale in Singapore compared to 4.11). Singapore firms are significantly better in jobs creation (4.23) compared to the global average (3.38). In terms of profitability, firms founded by Singapore's student entrepreneurs are at par with firms founded by students in the global GUESSS sample (score of 4.39 in Singapore compared to 4.37).

Figure 7.7: Company Performance Compared to Competitors since Establishment

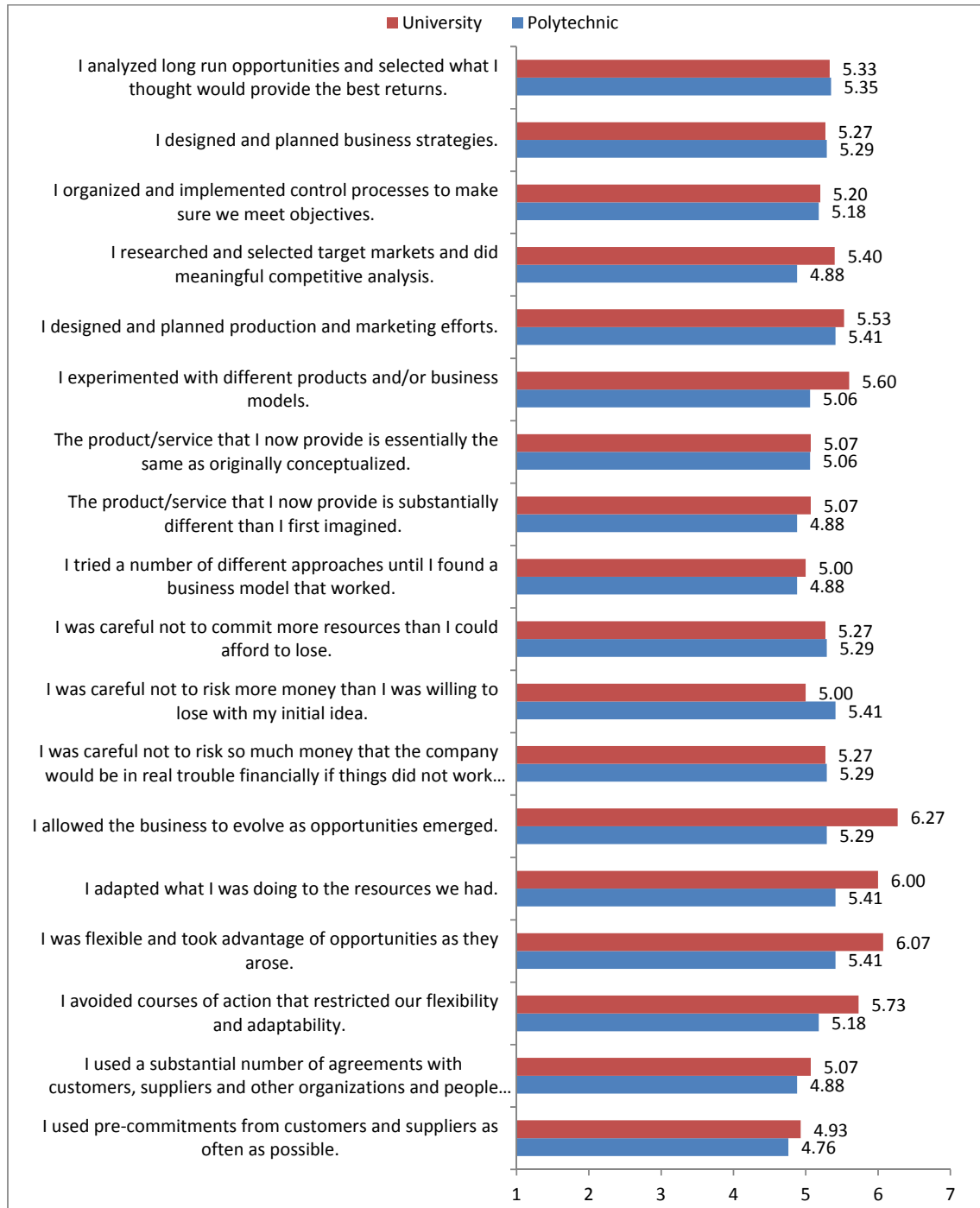


Company performance rated on 7-point scale where 1 = worse, 4 = equal and 7 = better

7.7 Foundation Process

University entrepreneurs are relatively more adaptive and flexible to allow the business to evolve (6.27 compared to 5.29 of polytechnic entrepreneurs), allocate resources (6.00 compared to 5.41), act on new opportunities (6.07 compared to 5.29), and decide on courses of action (6.27 compared to 5.29) compared to polytechnic entrepreneurs (Figure 7.8).

Figure 7.8 Foundation Process of New Business



Foundation process rated on 7-point scale where 1 = strongly disagrees and 7 = strongly agree.

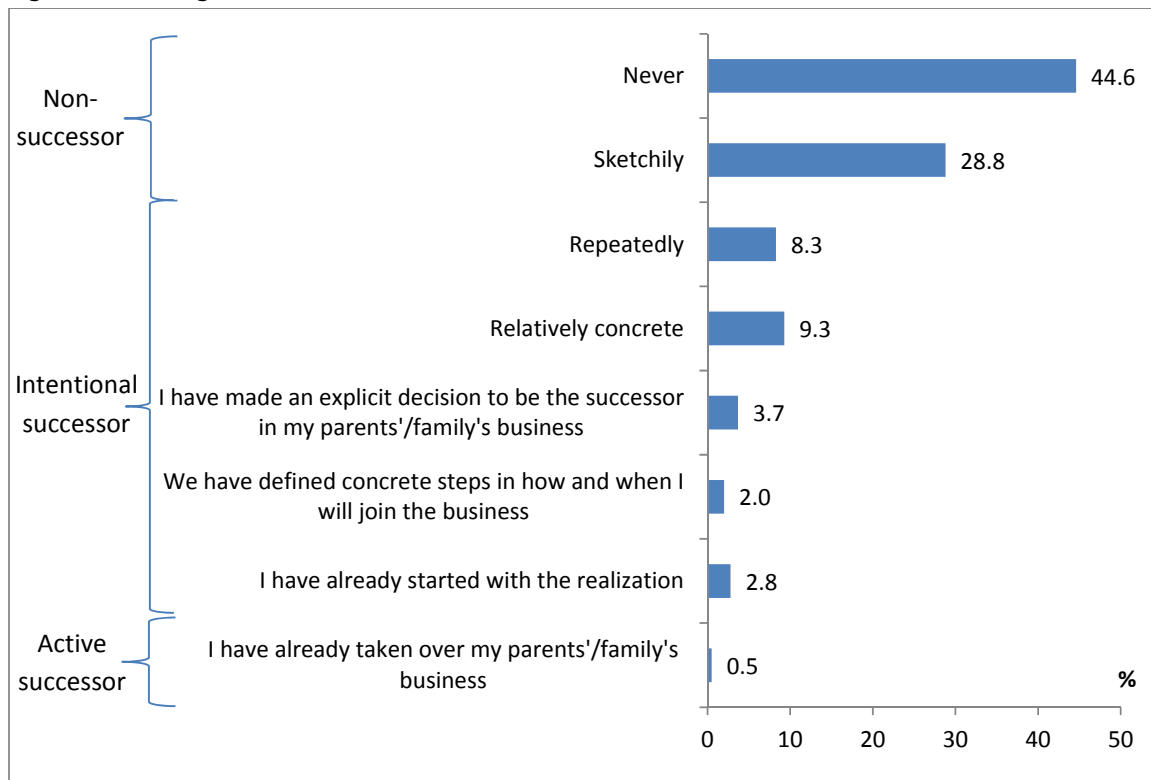
8 SUCCESSORS

A successor is defined as a student who has a family business background, with either one or both of the parents currently owning or active in a business. The group of successors (n=816) was asked an extra set of questions on their succession intentions.

8.1 Strength of Succession Intention

26.1% (n=213) of the Singapore students who have family business background are intentional the intentional successors who have at least repeatedly thought about taking over their parents' business, while only 0.5% (n=4) of them are already currently active in their parents' business (**Figure 8.1**).

Figure 8.1: Strength of Succession Intention



8.2 Family Firm Orientation

Generally, students are positively oriented towards their family business in terms of emotional attachment (4.45), personal meaning (4.52) and emotional connection (4.57) (Figure 8.2).

Figure 8.2: Family Firm Orientation

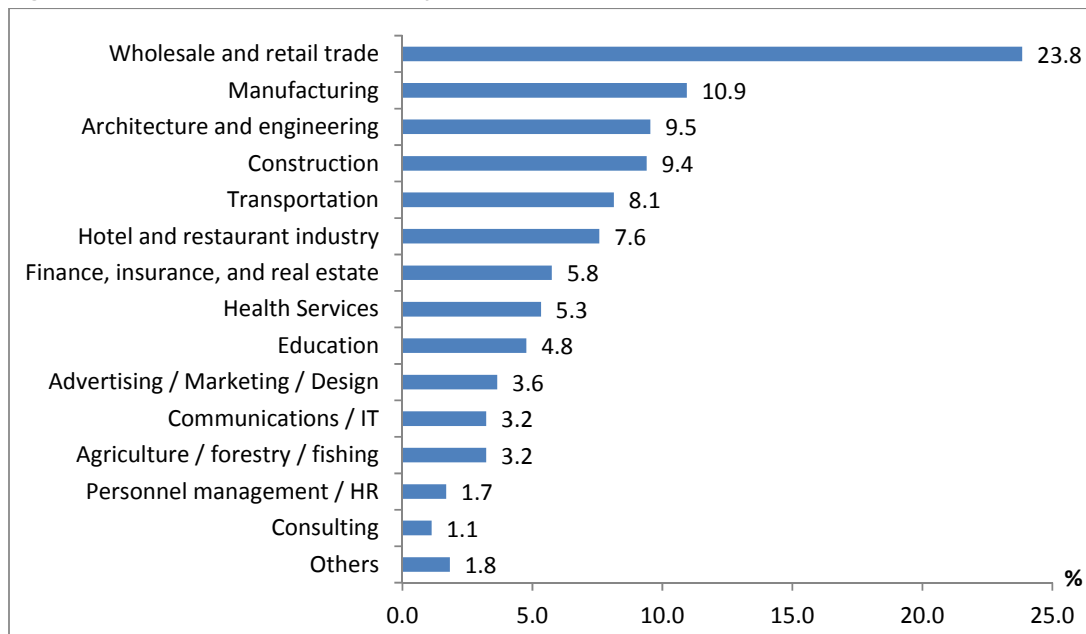


Family firm orientation rated on 7-point scale where 1 = strongly disagree, 7 = strongly agree

8.3 Industrial Sector

Close to a quarter of the family businesses are active in wholesale and retail trade, followed by manufacturing (10.9%), engineering (9.5%) and construction (9.4%) (Figure 8.3).

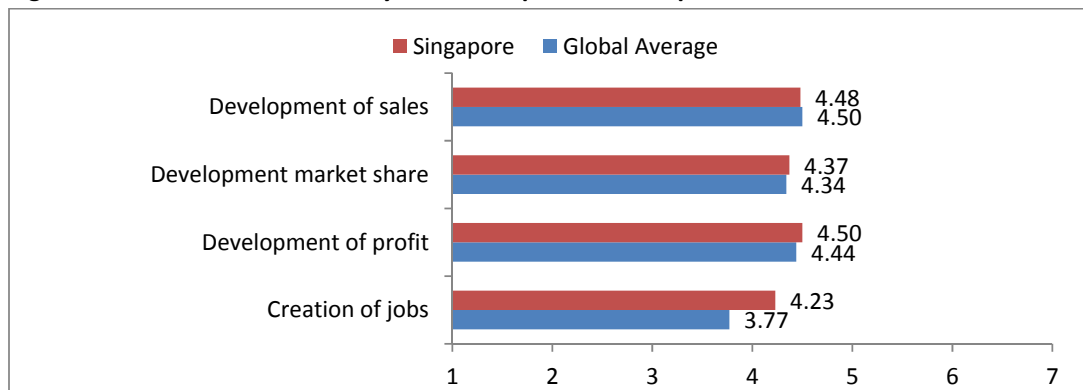
Figure 8.3: Industrial Sector of Family Firms



8.4 Performance of Family Business

Overall, the family businesses have performed as well as their competitors in terms of sales, market share, profits and job creation (**Figure 8.4**). The performance of Singapore family firms is slightly better than the global average in terms of job creation and about at par with the global average in the other aspects.

Figure 8.4: Performance of Family Firms Compared to Competitors over Last Three Years

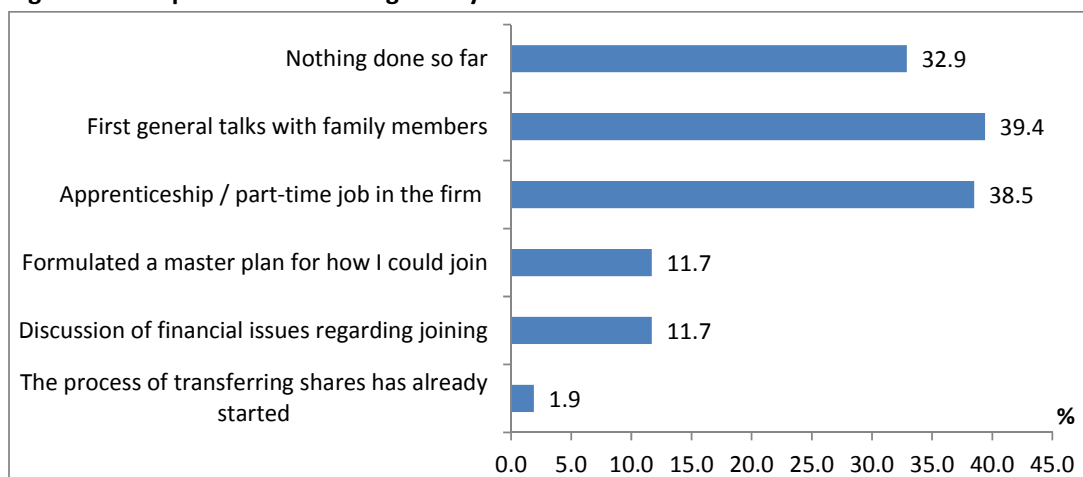


Company performance rated on 7-point scale where 1 = worse, 4 = equal and 7 = better

8.5 Steps Taken to Join Family Business

More than one-third of the students who are intentional successors have had first general talks with their family members while 38.5% of them have started to work in their family company as either apprentices or part-time staff (**Figure 8.5**).

Figure 8.5: Steps Taken for Joining Family's Firm



8.6 Barrier to Succession

The students found that the top two barriers to becoming a successor in family business are technical knowledge (4.81) and skills / capabilities (4.77) (**Figure 8.6**). To them, working daily with their parents or family members (4.09) is the least serious barrier.

Figure 8.6: Barrier to Succession



Barrier to succession rated on 7-point scale where 1 = not at all and 7 = very much

9 CONCLUSIONS

The findings from GUESSS Singapore 2011 indicate that there is a healthy level of interest in entrepreneurship among students in Singaporean IHLs, with 38% of students having given serious thought to starting their own business ventures. The study suggests that students' interest in entrepreneurship is shaped by a variety of factors, including their own personal characteristics, their family background and their perceptions of the environment. For students in Singapore IHLs, the opinions and expectations of parents and family members are especially important. Students with strong founding intentions enjoy the support of family members who reacted positively to their entrepreneurial aspirations. On the flipside, students who have no entrepreneurial intentions believe that their parents and closed ones will be less approving if they plan to start their own business. As such, a more practical priority would be to focus on students who have expressed definite interest to found their own firms, and who may require assistance in realizing their entrepreneurship intentions.

The study also shows that Singapore IHLs play an important role in fostering and providing a positive environment for students to engage in entrepreneurial activities. Compared to students in many of the other GUESSS participating countries, entrepreneurially-minded students in Singapore IHLs have taken more concrete steps to actualize their intentions. Singapore's Entrepreneurship Index (a measure that combines interest with actions taken) is higher than the global average and places Singapore in the top half of the global GUESSS rankings in terms of overall entrepreneurial strength. This testifies to the success of local IHLs in putting in place effective entrepreneurship programs and bringing these offerings to the attention of students. Students in Singapore on the whole have greater awareness of entrepreneurship promotion efforts in local IHLs compared to students in overseas IHLs. Those who have participated in the entrepreneurship programs offered by local IHLs also tend to be more satisfied on average compared to students from other countries. Singapore IHLs are perceived to provide programs that are helpful in equipping students with knowledge about entrepreneurship and skills to become an entrepreneur. Furthermore, over 40% of Singapore students agree that there is a favorable climate for entrepreneurship in the local universities and polytechnics, much higher than the global average of 36%. Students with strong interest in founding their own firms (categorized as "intentional entrepreneurs" per GUESSS terminology) also drawn on their IHL studies to develop business ideas and recruit potential founding partners from friends and contacts in the IHLs.

However, the proportion of active student entrepreneurs who have already founded their own ventures is quite low at 1%, compared to the global average of 2.5%. The low rate of active founders in Singapore highlights the complexities in promoting student entrepreneurship. Despite the slate of support and promotion programs provided at IHLs, the overwhelming majority of students, even those who have very strong interest in entrepreneurship and who have taken concrete steps to become entrepreneurs, do not seek to actually start new businesses while they are still in school. This study reveals that there are many factors that influence this decision, including the timing of entrepreneurial realization. A key result from GUESSS 2011 is that entrepreneurial students in Singapore view entrepreneurship as a longer-term career option. Only 10% aspire to start their own businesses immediately after completing their education. This proportion triples when students have been out of school for 5 years. As such, entrepreneurship programs at IHLs do not yield

immediate results as the substantive impact is only apparent after the passing of several years. Hence, the value of entrepreneurship offerings might be more appropriate to gauge from a longer-term perspective.

There are generally high levels of awareness and participation in entrepreneurship programs offered by Singapore IHLs. However, gaps exist as a sizeable proportion of interested student entrepreneurs are not aware of the full range of entrepreneurship programs offered at IHLs. Our analysis shows that there is strong overall demand for entrepreneurship-related courses and entrepreneurship support activities among intentional entrepreneurs; however, many interested students are not aware that these programs are already available in their schools. In particular, close to half the intentional entrepreneurs would like to attend lectures and seminars about family entrepreneurship and social entrepreneurship, and would like the IHLs to provide contact platforms for them to interact with potential entrepreneurs. Close to one-third of polytechnic students expressed the desire to participate in business plan contests and workshops. In all instances, such activities are already being offered in Singapore's universities and polytechnics, but are not reaching the entirety of the potential target audience.

The presence of gaps is also revealed in the lack of engagement among certain student. There is significant proportion of intentional entrepreneurs who do not participate in the entrepreneurship offerings at local IHLs. Some of these students are aware of the programs but have not participated, while others are not aware of the programs but claim to have no need for them.

One key finding from the GUESSS Singapore 2008 study is still true 3 years later. There is a notable difference between business school students and non-business school students in terms of the types of businesses they intend to start, the types of entrepreneurial skills they possess and their confidence in handling entrepreneurial tasks. Students from non-business schools and faculties have significantly lower levels of competency in financial analysis and are less confident in their ability to generate ideas and make decisions.

We also observed that there are different degrees of readiness and confidence among students at different levels of study. Postgraduates and graduate students are the most prepared to start their own ventures and exhibit the greatest self-confidence and independence, while polytechnic students appear to need more time and guidance. University undergraduates fall between these two groups. This pattern of preparedness is reflected in the participation of students in different types of entrepreneurship programs; many graduates and undergraduates with entrepreneurial intentions have already taken courses across a range of areas and participated in networking activities and business plan competitions. They have a strong demand for advanced assistance such as funding support and contact platforms to reach potential investors, as well as mentoring from experienced entrepreneurs. Due to their relative youth and inexperience, polytechnic students have strong demand for networking and coaching offerings that provide exposure to the "real world" of entrepreneurs.

There are also notable differences between graduate students and other students in terms of the industry profile of potential businesses that they plan to start. Compared to undergraduates and polytechnic students, graduate students have a significantly higher propensity to create new

technology-based ventures in sectors such as ICT, manufacturing and health services. Among intentional entrepreneurs pursuing Bachelor degrees and polytechnic diplomas, the target industries tend to be service oriented, such as hospitality and retail.

References

Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior. *Journal of Applied Social Psychology*, 32(1), 1-20.

Carter, N.M., Gartner, W.B., Shaver, K.G., Gatewood, E.J. (2003). The career reasons of nascent entrepreneurs. *Journal of Business Venturing*, 18(1), 13-39.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior. An introduction to theory and research*. New York: Addison-Wesley.

Zellweger, T., Sieger, P., & Halter, F. (2011). Should I stay or should I go? Career choice intentions of students with family business background. *Journal of Business Venturing*, 26(5), 521-536.

ANNEX A GUESSS 2011 COUNTRY REPRESENTATIVES

#	Country	Representative	University
1	Argentina (ARG)	Prof. Silvia Carbonell	IAE Business School
2	Austria (AUT)	Prof. Dr. Norbert Kailer	Johannes Kepler University Linz
3	Belgium (BEL)	Prof. Dr. Hans Crijns	Vlerick Leuven Gent Management School
4	Brazil (BRA)	Prof. Edmilson Lima	UNINOVE - Universidade Nove de Julho
5	Chile (CHI)	Prof. German Echeopar	Universidad Adolfo Ibanez, Santiago
6	China (CHN)	Prof. Zheng Han	Tongji University (CDHK), Shanghai
7	Estonia (EST)	Prof. Dr. Urve Venesaar	Tallinn University of Technology
8	Finland (FIN)	Prof. Asko Miettinen	Lappeenranta University of Technology
9	France (FRA)	Prof. Dr. Alain Fayolle Janice Byrne	EM Lyon Business School
10	Germany (GER)	Dr. Heiko Bergmann	University of Hohenheim
11	Greece (GRE)	Prof. Katerina Sarri	University of Western Macedonia
12	Hungary (HUN)	Prof. Dr. Laszlo Szerb Dr. Szilveszter Farkas	University of Pecs, Faculty of Business & Economics Szechenyi Istvan University, Győr
13	Ireland (IRE)	Dr. Naomi Birdthistle Dr. Briga Hynes	University of Limerick
14	Japan (JAP)	Prof. Noriko Taji	Hosei University
15	Liechtenstein (LIE)	Prof. Dr. Urs Baldegger	Hochschule Liechtenstein
16	Luxembourg (LUX)	Prof. Pol Wagner	Institut Universitaire International Luxembourg
17	Mexico (MEX)	Prof. Dr. Elisa Cobas-Flores	EGADE Business School, Tecnológico de Monterrey
18	Netherlands (NED)	Prof. Roy Thurik Dr. Joern Block Dr. Katrin Burmeister Dr. Ingrid Verheul	Erasmus University, Rotterdam
19	Pakistan (PAK)	Prof. Najaf Khan	GC University, Lahore
20	Portugal (POR)	Prof. Joao Leitao Prof. Rui Baptista	Technical University of Lisbon Instituto Superior Tecnico
21	Romania (ROM)	Dr. Lilian Ciachir	University of Bucharest
22	Russia (RUS)	Prof. Galina Shirokova Alexander Kulikov	St.Petersburg State University Graduate School of Management
23	Singapore (SIN)	Prof. Dr. Wong Poh Kam	National University of Singapore
24	South Africa (RSA)	Dr. Suzette Viviers	Stellenbosch University
25	Switzerland (SUI)	Dr. Philipp Sieger Prof. Rico Baldegger	University of St.Gallen (KMU/CFB-HSG) HEG Fribourg
26	UK	Prof. Robert Blackburn	Kingston University, Kingston

ANNEX B COMPARISONS OF SINGAPORE FIGURES REPORTED IN GLOBAL REPORT AND SINGAPORE REPORT

Singapore first submitted 2,391 responses in July 2011 to global project lead and later achieved 3,133 responses at the end of extended data collection period. The Singapore report was written based on the full dataset of 3,133.

As a result, the figures for Singapore reported in this GUESSS Singapore report are slightly different from those reported in the global report. Generally, the figures are not vastly deviated. The table below lists the two sets of Singapore figures, comparing those reported in global report (based on 2,391 responses from Singapore IHL students) and this current GUESSS Singapore report (based on 3,133 responses):

	Singapore figures reported in:	
	Global Report	Singapore Report
Chapter 1 INTRODUCTION		
Table 1.1: GUESSS 2011 Participating Countries		
Number of completed questionnaires	2,391	3,133
Response Rate	3.6%	4.7%
Figure 1.2: Age and Gender of Respondents across Countries		
Female Respondents (%)	56.5%	55.9%
Average Age (year)	20.1	20.2
Chapter 2 ENTREPRENEURIAL INTENTIONS		
Figure 2.2: Founding Intention across Countries		
Non-founders	60%	61%
Intentional founders	39%	38%
Active founders	1%	1%
Figure 2.5: Career Choice Motives, Singapore versus Global		
Challenge myself	5.58	5.53
Realize own dream	5.97	5.96
Achieve something	5.64	5.57
Gain higher position	5.65	5.54
Be own boss	5.08	4.98
Follow social mission	4.91	4.88
Earn higher income	5.80	5.75
Continue family tradition	3.99	3.76
Follow person I admire	4.56	4.39
Figure 2.7: Strength of Being Own Boss Motive across Countries		
Strength of being my own boss motive	5.08	4.98
Chapter 3 ENTREPRENEURSHIP INDEX		
Figure 3.1: Entrepreneurship Index for Business Students across Countries		
Business students	13.7	13.4
Figure 3.2: Entrepreneurship Index for Natural Science Students across Countries		
Natural science students	13.2	13.5
Figure 3.3: Entrepreneurship Index for Social Science Students across Countries		
Social science students	13.0	14.1

	Singapore figures reported in:	
	Global Report	Singapore Report
Chapter 4 ENVIRONMENT FOR ENTREPRENEURSHIP IN SINGAPORE UNIVERSITIES AND POLYTECHNICS		
Figure 4.2: Awareness of IHL Entrepreneurship Programs by Country		
Awareness on Entrepreneurship Programs	49%	54%
Figure 4.4: Students' Satisfaction with IHL Entrepreneurship Programs by Country		
Assessment of all University Offerings	3.59	3.65
Figure 4.8: Evaluation of IHLs' Overall Climate for Fostering Entrepreneurship (Global Comparisons)		
Evaluation of IHLs' overall climate for fostering entrepreneurship in general	4.43	4.44
Chapter 6 INTENTIONAL FOUNDERS		
Figure 6.9: Average Weekly Working Time to be invested in the New Venture		
Average weekly working time to be invested	45.7	46.1
Figure 6.10: Average Number of Intended Founding Partners by Country		
Average number of intended founding partners	1.37	1.38
Chapter 7 ACTIVE ENTREPRENEURS		
Table 7.1: Characteristics of Students' New Ventures		
No. of founding partners	2.18	2.40
Share of personal equity (%)	52.42	52.09
No. of employees today	2.81	2.80
No. of employees planned in 5 years	23.26	32.88
Growth factor	8.28	11.76

ANNEX C COMPARISONS OF SINGAPORE WEIGHTED AND UN-WEIGHTED FIGURES

In this study, the larger proportion of respondents from Singapore IHLs was diploma students from polytechnics (66.5%) and the remaining 33.5% were undergraduates / PhD / Master students from universities. However, in the actual universe of Singapore IHL students, the distribution stands at about 53% polytechnics students and 47% university students (Source: Singapore Yearbook of Statistics, based on total enrollment figures in 2009). To better reflect the actual proportional share of university versus polytechnic students in local IHLs, the figures in this report are weighted. The table below listed the difference between the weighted and un-weighted figures:

	Singapore figures	
	Un-weighted	Weighted
Executive Summary		
Level of Entrepreneurship Intention and Aspiration among Singapore Tertiary Students		
Strong Entrepreneurial Intention	38.0%	37.5%
Active Entrepreneur	1.0%	1.1%
Short Term Entrepreneurial Aspiration	15.0%	14.3%
Long Term Entrepreneurial Aspiration	40.6%	40.8%
Chapter 2 ENTREPRENEURIAL INTENTIONS		
Figure 2.1: Strength of Founding Intentions, Singapore versus Global		
Never	20.4	20.2
Sketchily	40.6	41.2
Repeatedly	13.1	13.3
Relatively concrete	10.4	10.2
I have made an explicit decision to found a company	6.5	6.4
I have a concrete time plan when to do the different steps for founding	4.7	4.4
I have already started with the realization	3.4	3.3
I am already self-employed in my own founded firm	0.8	0.8
I have already founded more than one company, and am active in at least one of them	0.3	0.3
Figure 2.2: Founding Intention across Countries		
Non-founders	61	61
Intentional Founders	38	38
Active Founders	1	1
Figure 2.4: Vocational Aspirations of IHL Students, Singapore versus Global		
Right after studies		
Aspiring Employee	59.0	61.8
Aspiring Founder	10.1	9.9
Aspiring Successor	4.9	4.4
Others	26.1	23.9
5 years after studies		
Aspiring Employee	32.2	33.4
Aspiring Founder	29.6	30.6
Aspiring Successor	11.0	10.1
Others	27.2	25.8

	Singapore figures	
	Un-weighted	Weighted
Figure 2.5: Career Choice Motives, Singapore versus Global		
Grow and learn	6.01	6.01
Realize own dream	5.97	5.96
Get greater flexibility	5.86	5.83
For financial security	5.83	5.82
Earn higher income	5.78	5.75
Achieve something	5.62	5.57
Gain higher position	5.60	5.54
Challenge myself	5.55	5.53
Be own boss	5.04	4.98
Exploit business opportunity	5.02	4.98
Develop idea for product	4.97	4.93
Follow social mission	4.89	4.88
Be innovative	4.94	4.87
Follow environmental mission	4.85	4.82
Follow person I admire	4.49	4.39
Build business for descendants	4.19	4.07
Continue family tradition	3.89	3.76
Figure 2.7: Strength of Being Own Boss Motive across Countries		
Strength of being my own boss motive	5.04	4.98
Chapter 3 ENTREPRENEURSHIP INDEX		
Figure 3.1: Entrepreneurship Index for Business Students across Countries		
Business students	13.4	13.4
Figure 3.2: Entrepreneurship Index for Natural Science Students across Countries		
Natural science students	13.1	13.5
Figure 3.3: Entrepreneurship Index for Social Science Students across Countries		
Social science students	13.3	14.1
Chapter 4 ENVIRONMENT FOR ENTREPRENEURSHIP IN SINGAPORE UNIVERSITIES AND POLYTECHNICS		
Figure 4.1: Awareness of IHL Entrepreneurship Programs, Singapore versus Global		
Entrepreneurship in general	72	75
Family firms	14	14
Financing entrepreneurial ventures	49	51
Technology entrepreneurship	52	56
Social entrepreneurship	48	49
Entrepreneurial marketing	57	58
Innovation	60	62
Business planning	60	62
Workshops/networking with entrepreneurs	65	68
Contact platforms with investors	34	37
Business plan contests	61	64
Mentoring/coaching programs	47	49
Contact points	36	40
Financial support	54	54

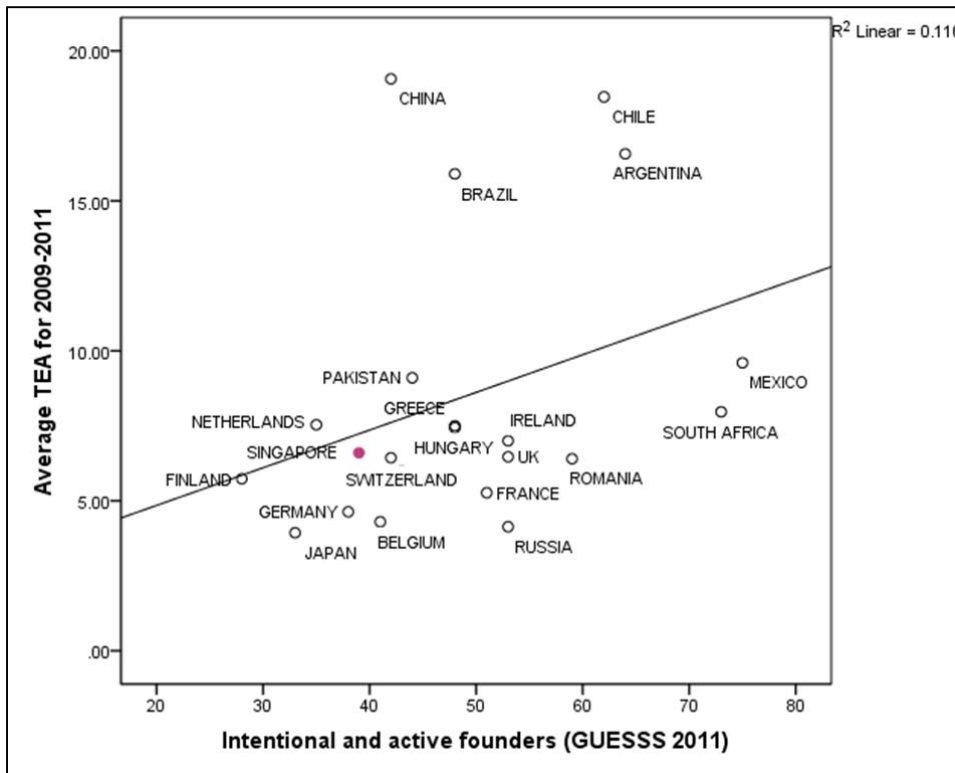
	Singapore figures	
	Un-weighted	Weighted
Figure 4.3: Students' Satisfaction with IHL Entrepreneurship Programs , Singapore versus Global		
Entrepreneurship in general	3.58	3.60
Family firms	3.66	3.69
Financing entrepreneurial ventures	3.57	3.59
Technology entrepreneurship	3.62	3.64
Social entrepreneurship	3.65	3.66
Entrepreneurial marketing	3.61	3.63
Innovation	3.67	3.67
Business planning	3.60	3.61
Workshops/networking with entrepreneurs	3.56	3.59
Contact platforms with investors	3.57	3.59
Business plan contests	3.56	3.57
Mentoring/coaching programs	3.65	3.67
Contact points	3.63	3.67
Financial support	3.70	3.70
Figure 4.2: Awareness of IHL Entrepreneurship Programs by Country		
Awareness on Entrepreneurship Programs	52%	54%
Figure 4.4: Students' Satisfaction with IHL Entrepreneurship Programs by Country		
Assessment of all University Offerings	3.61	3.65
Figure 4.6: Perceptions of Climate for Entrepreneurship in IHLs: Global Comparisons across Countries		
There is a favorable climate for becoming an entrepreneur in my university / polytechnic (% agreeing with this statement)	42.5	42.7
Figure 4.7: Perceptions of Climate for Entrepreneurship in Singapore IHLs		
At my University/Polytechnic I found many entrepreneurial-minded classmates.	42.5	42.7
There is a favorable climate and premises for becoming an entrepreneur at my University/Polytechnic.	37.9	38.3
Figure 4.8: Evaluation of IHLs' Overall Climate for Fostering Entrepreneurship (Global Comparisons)		
Evaluation of IHLs' overall climate for fostering entrepreneurship in general	4.42	4.44

Chapter 6 INTENTIONAL FOUNDERS		
Figure 6.1: Founding Steps Already Taken, Singapore versus Global		
Nothing done so far	38.2	35.3
Thought of first business ideas	52.9	55.4
Formulated business plan	21.3	22.2
Identified market opportunity	31.9	33.7
Looked for potential partners	27.4	29.6
Purchased equipment	6.1	5.5
Worked on product development	9.4	10.2
Discussed with potential customers	8.6	9.1
Asked institutions for funding	3.6	3.9
Decided on date of foundation	3.9	4.0
Figure 6.9: Average Weekly Working Time to be invested in the New Venture		
Average weekly working time to be invested	46.2	46.1
Figure 6.10: Average Number of Intended Founding Partners by Country		
Average number of intended founding partners	1.36	1.38
Chapter 7 ACTIVE ENTREPRENEURS		
Table 7.1: Characteristics of Students' New Ventures		
No. of founding partners	2.25	2.40
Share of personal equity (%)	53.42	52.09
No. of employees today	2.77	2.80
No. of employees planned in 5 years	27.03	32.88
Growth factor	9.74	11.76

ANNEX D CORRELATIONS OF GEM AND GUESS

The figure below shows the population-wide entrepreneurship intention rate measured by the Global Entrepreneurship Monitor (GEM) 2011 compared to the student intention measures used by GUESSS. Singapore's student entrepreneurial intentions are on par with the average of all countries when compared to Total Early-Stage Entrepreneurial Activity (TEA).

Average Total Early-Stage Entrepreneurial Activity (TEA) Rate 2009-2011 to Percentage of Intentional and Active Founders



Total early-stage Entrepreneurial Activity (TEA) rate is defined as the prevalence rate of individuals who are actively involved in business start-ups, either in the phase in advance of the birth of the firm (nascent entrepreneurs), or the phase spanning 42 months after the birth of the firm (owner-managers of new firms). (Source: GEM 2011 Global Report)

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 among the NUS community, nurture start-ups 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.



**NUS Entrepreneurship Centre
National University of Singapore
21 Heng Mui Keng Terrace, Level 5,
Singapore 119613**

<http://www.nus.edu.sg/enterprise/nec/>