



Global University Entrepreneurial Spirit Students' Survey

2013/2014 Singapore Report

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EXECUTIVE SUMMARY

Background

Global University Entrepreneurial Spirit Students' Survey (GUESSS) is a global biennial research project focused on understanding the 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 2013/2014 edition of GUESSS was administered through a common web-based questionnaire between October 2013 and March 2014. A total of 109,026 students from 759 universities in 34 countries participated in the 2013/2014 study.

The NUS Entrepreneurship Centre (NEC) was invited to lead and coordinate the 2013/2014 study for all tertiary institutions in Singapore. NEC also led and coordinated Singapore's participation in GUESSS 2008 and GUESSS 2011. In Singapore, a total of 6,471 students from the 3 public universities and 5 polytechnics were successfully surveyed. 51% of the Singapore IHL respondents are female and 33% are foreign students of non-Singaporean nationality.

The overall findings of 34 countries reported in the global GUESSS 2013/2014 were released in May 2014 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 2013/2014 Singapore Findings

❖ Entrepreneurial Spirit in Singapore IHLs

In the GUESSS framework, the two primary constructs to measure entrepreneurial spirit are strength of intention and career aspirations. The different levels of entrepreneurship intention and aspiration among Singapore IHL students are shown in Table E1 and Figure E1.

▪ Strength of Entrepreneurial Intentions

In general, findings from GUESSS 2013/2014 show a healthy and encouraging level of interest in entrepreneurship among students in Singapore IHLs. Several key indicators for Singapore were found to be higher when compared to the global average and findings from the last GUESSS survey in 2011.

Almost two-thirds of the students (62.5%) indicated that they have medium to high entrepreneurial intention strength. This is significantly higher than the global average of 53.6%. Some students with strong interest have taken steps to actualize their intentions. 16.3% of Singapore IHL students are nascent entrepreneurs currently trying to start their own business or to become self-employed, compared to 15.1% globally. The percentage of students in Singapore who have already founded their business (active entrepreneurs) has increased significantly from 1.1% in GUESSS 2011 to 4.2% in GUESSS 2013/2014.

Foreign-nationality students studying in Singapore IHLs have stronger entrepreneurial intention (67% rating medium to high intention) compared to local students who are Singaporean citizens (60%). However, the rate of active entrepreneurship is higher among local students (4.1% compared to 3.1%

for foreign students). The rate of nascent entrepreneurship is comparable across both foreign (16.5%) and local (16%) student cohorts.

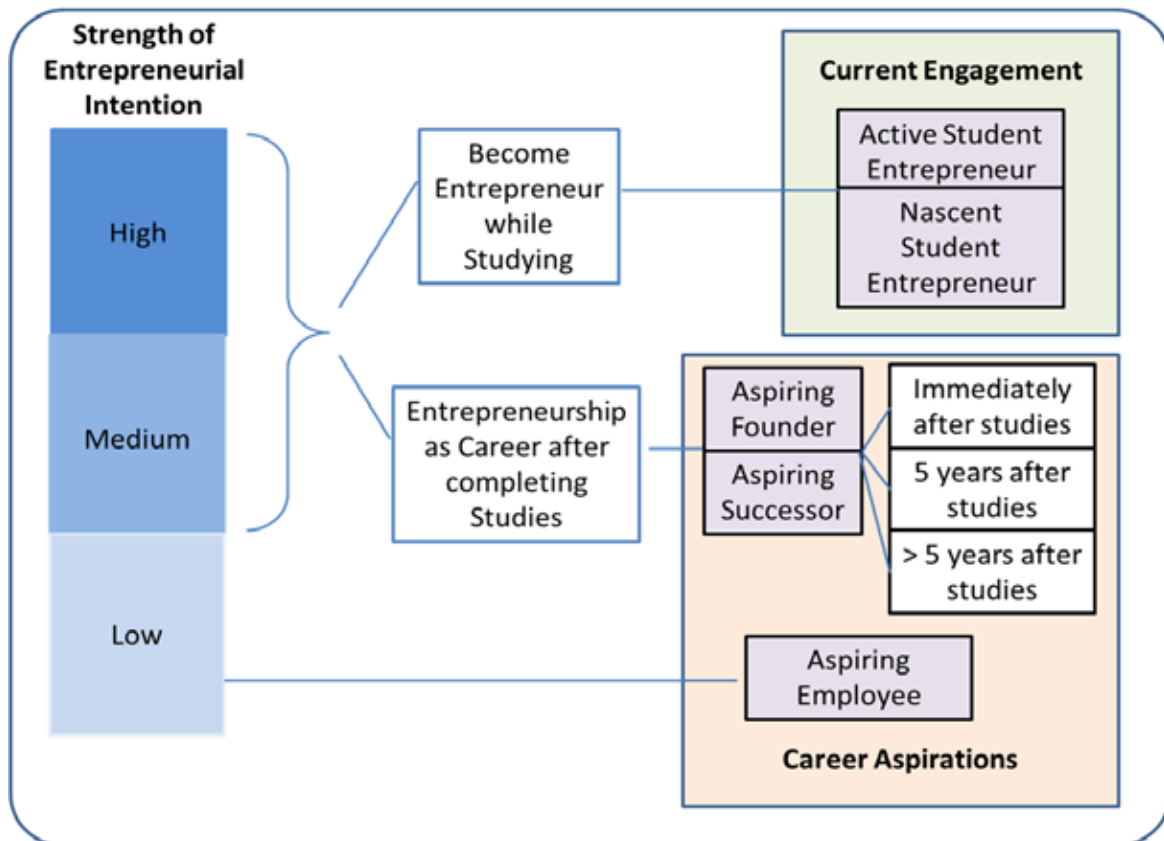
▪ Entrepreneurial Aspiration (Entrepreneurship as Career Choice)

5.3% of Singapore IHL students aspire to be involved in entrepreneurial activities immediately after completing their studies¹, either founding their own business (4.1%, termed aspiring founders) or taking over an existing business (1.2%, termed aspiring successors). This proportion is lower than the global average of 9% (comprising 7% aspiring founders and 2% aspiring successors).

A significantly higher percentage (34.5%, comprising 28.7% aspiring founders and 5.8% aspiring successors) of Singapore IHL students aspire to entrepreneurial careers 5 years after completing their studies. These findings point towards the similar trend of “first employee, then founder” pattern noted in the GUESSS 2013/2014 international findings. However, the proportion with long-term entrepreneurial aspiration in Singapore is lower than the global average of 41%.

Short term entrepreneurial aspiration is more prevalent among local students (4.7% aspiring founders) than foreign students (2.9%). This trend is reversed in the longer term with higher proportion of aspiring founders among foreign students (33%) than local students (27%).

Figure E1: Framework for Entrepreneurial Spirit Constructs in GUESSS



¹ For purposes of clarity and comparability with global benchmarks, figures for entrepreneurial career aspirations are computed after excluding from the base those who will fulfil National Service obligations or intend to pursue further studies.

Table E1. Levels of Entrepreneurship Intention and Aspiration among Singapore IHL Students

	Singapore*	Global Average
Medium to High Entrepreneurial Intention Strength**	62.5%	53.6%
Short Term Entrepreneurial Aspiration (to be a founder or successor after studies)	5.3%	9%
Long Term Entrepreneurial Aspiration (to be a founder or successor 5 years after studies)	34.5%	41%
Nascent Entrepreneurs (currently trying to start their own business/ to become self-employed)	16.3%	15.1%
Active Entrepreneurs (currently active in a self-founded firm)	4.2%	5.5%
Successors (students with family business backgrounds)	33.9%	32.8%

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

** Respondents who reported an average score of 3.5 to 4.49 in the aggregated entrepreneurial intention variable were classified as medium entrepreneurial intention strength while those who reported a score of 4.5 to 7 were classified as high entrepreneurial intention strength group in the report.

❖ Factors Influencing Strength of Entrepreneurial Intentions

▪ Demographics

Students enrolled in business school, polytechnic students, male students and students with family business backgrounds demonstrated stronger intentions in entrepreneurship. Interestingly, students who rate themselves as better academic performers are also found to have stronger entrepreneurial intention strength.

▪ The Role of IHLs

56% of students in Singapore indicated that their IHLs encourage students to engage in entrepreneurial activities, with close to half of the students agreeing that IHLs provide a favourable climate for them to become entrepreneurs and that IHLs' atmosphere inspires students to develop ideas for new ventures. These proportions are higher than the global averages.

However, almost two-thirds of students in Singapore have not attended any entrepreneurship programs offered by their IHLs. These proportions are comparable with the global average.

Those who have attended IHL entrepreneurship offerings are generally satisfied with their experience. Compared to the global average, Singapore IHLs are perceived to provide programs that are much more helpful in equipping students with knowledge about entrepreneurship and skills to become an entrepreneur. Nascent and active student entrepreneurs in Singapore also indicate that IHL entrepreneurship programs have enhanced their ability to identify opportunities.

- The Role of Society

Students in Singapore IHLs have a greater tendency to perceive local society as rigid and highly structured compared to the global average.

A positive association between lower regulation in society and higher entrepreneurial intentions is observed in the findings of GUESS 2013/2014. Countries with higher entrepreneurial intentions like Greece and Brazil tend to be perceived as less regulated while there is much lower level of entrepreneurial intentions in countries like Denmark and Finland which are perceived to be more highly regulated. Our analysis suggest that given the degree of perceived regulation of society, the strength of student entrepreneurial intention in Singapore is higher than would be expected.

- Personal Characteristics

Corresponding to their higher strength of entrepreneurial intentions, the business school students, male students and students with family entrepreneurial background reported significantly more favourable impressions of entrepreneurship and would receive more positive reaction from the people around them should they decide to become entrepreneurs. In general, reactions from family and friends are rather positive for all students.

Singapore IHL students with stronger entrepreneurial interest tend to show stronger confidence in their own ability to control their own decisions and direction. Perception of control is similarly highest among aspiring founders, more so those with short-term entrepreneurial aspirations.

In terms of entrepreneurial self-efficacy, entrepreneurial students view themselves as the most competent in being a leader and communicator (4.97 rated on a 7-point scale) and the least competent in areas relating to innovation such as creating new products and services (4.4).

Singapore IHL students generally perceive business ownership and starting their own business to be much more risky as compared to managing their own business. While there is fairly consistent perception that entrepreneurship is risky, the willingness to take risk differs significantly among different groups of students. Willingness to take risks is noted to be higher among polytechnic students, business school students, those with entrepreneurial aspirations and strong entrepreneurial intentions.

In summary, students who have strong entrepreneurial intentions reported the most positive impression of entrepreneurship (5.75), more favourable reactions from family and friends (5.65), the highest levels of perception of control (4.94) and entrepreneurial self-efficacy (5.32), and greatest willingness to take risks (5.27).

- Family Background

Family background, or more specifically the occupational background of parents, is observed to have some degree of influence on the students' career aspirations.

In Singapore, more than two-thirds (71.7%) of aspiring successors right after studies and two in five aspiring founders (41.9%), come from backgrounds with family businesses. In contrast, the overwhelming majority of aspiring employees do not have any family business background.

❖ **Nascent Entrepreneurs**

16% of the Singapore IHL students are currently trying to start their own business or to become self-employed, slightly higher than the global average of 15%. The percentage of nascent entrepreneurs in Singapore is higher than in some high income economies such as France (12%) and Finland (12%), but lower than Australia (21%) and England (18%).

In general, the majority of Singapore nascent entrepreneurs intend to venture into trade (23%) and information technology & communication (17%) sectors. A large majority, 87.7% plan to found their firm with at least 1 co-founder. More importantly, 60.5% of nascent entrepreneurs have co-founders with the same educational background while a significantly large number (63.1%) met their co-founders in the university or polytechnic. Almost two-thirds (61.7%) indicated that their products are new to all or majority of customers, suggesting a high degree of innovativeness in these nascent ventures. At least one third of the nascent entrepreneurs from Singapore have collected information about markets or competitions, discussed the business ideas with potential customers, and wrote a business plan.

❖ **Active Entrepreneurs**

In Singapore, the percentage of active entrepreneurs among Singapore IHL students (4%) is lower than the global average of 6%. More than one third of the student entrepreneurs are active in wholesale or retail trade, followed by information technology and communication (16.4%) and education and training (13.5%). With a current average of approximately 3 employees per venture, active student entrepreneurs aim to increase this level of employment to an average of 59 employees in 5 years' time. This implies a projected business growth factor of 22.12, which is almost double than the reported growth factor of 11.76 in GUESS Singapore 2011. This suggests greatly increased business confidence among student entrepreneurs in the intervening few years since 2011.

Teamwork is important, with 70.9% of active entrepreneurs founding their new ventures with at least 1 other partner. Almost half of the active entrepreneurs (44.6%) have at least 1 member of the founding team with the same educational background while 44.7% met at least 1 of their co-founders in the university or polytechnic. The businesses founded by the active entrepreneurs in Singapore are self-assessed to have generally performed as well as their competitors in terms of sales (4.23 on a 7 point scale where 4 indicate parity with competitors), profit (4.17) and market share growth (3.79). Among the different performance aspects, students' ventures were self-rated to be highest on "innovativeness" at 4.61. This suggests that the strongest advantage held by student entrepreneurs over their competitors is in terms of innovation.

❖ **Family Businesses**

33.9% of the surveyed students come from a background of family-run businesses. More than a quarter of family businesses are active in wholesale and retail trade (26.1%) and approximately one-fifth are active in the construction and manufacturing sector (19.1%). There is a noticeable difference in the sectoral composition of family businesses compared to the ventures run by nascent and active entrepreneurs.

Students are noted to be rather indifferent towards their family business in terms of emotional attachment to their parents' firm (3.8 on a scale of 1 to 7). The strength of succession intention among students is also observed to be rather weak. In most cases, students indicated that they disagreed with the statements with regards to their determination to become a successor (3.06) and the strong intention to become a successor (3.09). Additionally, the strength of succession intention decreases as

students pursue a higher level of education, with the diploma students having the highest strength (3.32) and postgraduate students the lowest (2.83).

❖ **Career Aspirations and Entrepreneurial Intentions over Time**

Entrepreneurial interest among students in Singapore remains fairly comparable over the years, with around 40% expressing serious interest in entrepreneurship. However, a downward trend in both short and long-term entrepreneurial aspirations among students in Singapore is observed over time. The percentage of Singapore students with short term entrepreneurial aspiration has dropped from 19% in 2011 to 5% in 2013. A similar reduction is seen in long-term aspirations; 35% in GUESSS 2013/2014 compared to 55% in GUESSS 2011. These decreases over time are also observed in the global samples that reported lower percentage of entrepreneurial aspirations both in immediate and longer terms. As such, some of the declining aspiration levels in Singapore may be explained by global trends. However, the magnitude of decrease in Singapore is more pronounced, pointing to factors specific to the local context.

On the other hand, the percentage of students who have already started a business has increased significantly and is noted to be the highest (4.2%) in 2013/2014 compared to the past years. However, the proportion of active entrepreneurs in Singapore is still lower than the global average.

Taken together, the findings address trends in two groups of students with strong entrepreneurial interest: (i) those who become entrepreneurs while still at school, which has increased over time; (ii) those who view entrepreneurship as a career to be pursued after completing their studies, which has decreased over time within a 5 year timeframe.

For the first group, the increased proportion suggests improvements in conditions and resource availability for students to found their own businesses. This may in part be attributed to the efforts of IHLs to promote campus entrepreneurship, including provision of programs, incubation facilities and access to funding. This may also reflect greater awareness of initiatives to support young and first-time entrepreneurs, such as the ACE Start-up Grant.

For the second group, there are several possible explanations for the declining proportion of those aspiring to become entrepreneurs within 5 years of leaving school. Firstly, the employment market in Singapore continues to be robust with ample job opportunities for fresh and recent IHL graduates. This raises the opportunity costs of entrepreneurship, especially in the short to medium term. Secondly, there has been increasing emphasis in Singapore on technology-driven entrepreneurship which leverages on intellectual property (IP) and innovation. These types of ventures require more sophisticated knowledge of processes and markets, and also take a longer time to gestate. It is possible that potential entrepreneurs in IHLs have adjusted their aspirations beyond 5 years in order to gain the requisite experience and expertise.

❖ **Perceived Entrepreneurship Environment in Singapore**

61% of Singapore IHL students felt that the Singaporean government provides strong support for youth entrepreneurship. Slightly more than half of the students perceive entrepreneurship as a favourable career choice for university and polytechnic graduates. Close to 50% of the Singapore students expressed that the business environment here is conducive to start a business and that the education system prepares students to be more entrepreneurial. Access to financial capital is reported as the most significant barrier for young entrepreneurs starting a business in Singapore.

Conclusions

- Overall, the findings from GUESS Singapore 2013/2014 indicated that there is a healthy level of interest in entrepreneurship among students in Singapore IHLs.
- Higher levels of entrepreneurial intentions are observed for particular groups namely, students in business school and polytechnics, male students and students with family business background.
- There are also notable differences between university and polytechnic students in terms of their entrepreneurial intentions and industry profile of potential businesses that they plan to start.
- Singapore IHLs play an important role in fostering and providing a positive environment for students to engage in entrepreneurial activities and for like-minded entrepreneurs to meet. However, the effectiveness of IHLs in Singapore in influencing entrepreneurial intentions of students may be very much limited as most students still do not consider entrepreneurship an option immediately after studies; the “first employee, then founder” pattern is apparent in the career aspirations of Singapore students.
- IHLs should continue to provide entrepreneurial programs on campus. While the participation rate is only around one-third, students who participated - in particular nascent and active entrepreneurs - find the programs beneficial and effective.
- There is heavy emphasis on teamwork among student entrepreneurs. An overwhelming percentage of nascent and active entrepreneurs are intending or have founded their businesses with at least 1 other co-founder. The majority of co-founders met while studying in IHLs.
- Despite having strong entrepreneurial intentions, many students in Singapore IHLs are not intending to pursue a career in entrepreneurship within the next 5 years. The key challenges are to translate this interest among students into actual entrepreneurial engagement, and to sustain interest among IHL graduates to maximize entrepreneurial engagement in the longer term.
- More importantly, there is a noticeable trend of decreasing entrepreneurship career aspiration among students in Singapore IHLs. While entrepreneurial interest among students has remained fairly comparable over the years, both short (immediately after studies) and longer (5 years after studies) term entrepreneurial aspirations among students have been falling. This is partly explained by global trends where similar decline in aspiration is observed. In the Singapore context, declining aspiration for entrepreneurial careers in the short to medium term could be attributed to the robust employment market. Potential entrepreneurs in IHLs may also have adjusted the aspirations beyond 5 years after graduation in order to gain the experience and expertise required for technology-based entrepreneurship, which is increasingly emphasized in national policies.
- On the other hand, the proportion of active student entrepreneurs has increased dramatically since 2011. This suggests that there have been improvements in the conditions and resource availability for students who wish to become entrepreneurs while still studying.
- Additional issues mentioned include the problem of access to financial capital, ranked as the top barrier for young entrepreneurs in Singapore and a perceived lack of innovation-related skills among Singapore students, including those with strong entrepreneurial intentions. There is a need for Singapore IHLs to place greater emphasis on programs which promote innovations-related skills.
- Given the nature of entrepreneurship and the prevalent “first employee, then founder” pattern observed among students in Singapore, it may be more appropriate for us to take a long-term approach towards evaluating entrepreneurial behaviour and measuring the impact of IHL entrepreneurial programs. Rather than student venture creation as the desired outcome, IHLs may set different objectives that are oriented towards nurturing entrepreneurial mind-sets, imparting skills and facilitating sustainable entrepreneurship networks.

1 INTRODUCTION

1.1 Overview of GUESSS 2013/2014

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 (KMU-HSG) 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:

- Systematic and long-term observation of entrepreneurial intentions and activities of students
- Identification of antecedents and boundary conditions in the context of new venture creation and entrepreneurial careers in general
- Observation and evaluation of universities' activities and offerings related to the entrepreneurial education of students

More information of 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 34 countries that participated in GUESSS 2013/2014 (**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 Nigeria (n=7) to 104 universities from Brazil (12,561). In addition, the response rates vary widely from 0.4% for Scotland to 33.4% for Liechtenstein.

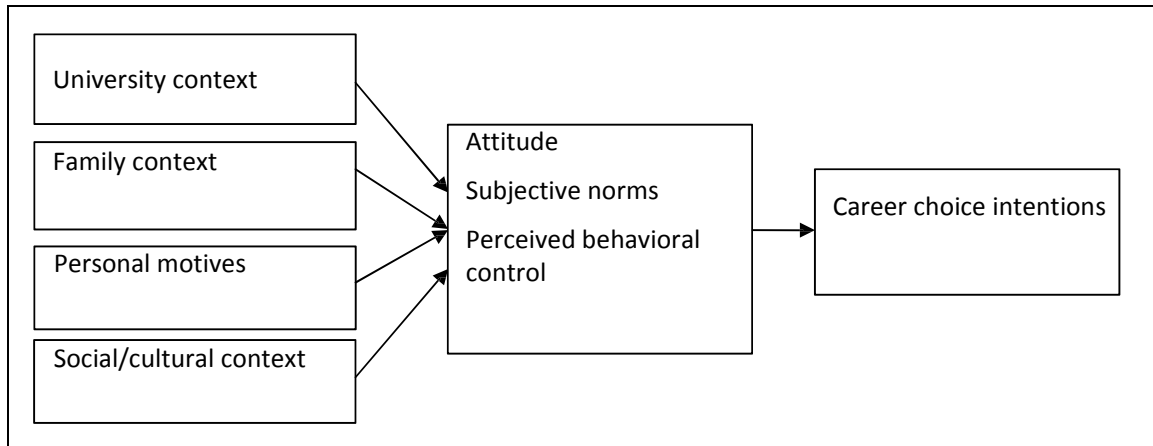
With the 6th edition of GUESSS in 2013/2014, a significantly improved questionnaire has been adopted; thus, the practical and scientific impacts of GUESSS are strengthened. Consequently, direct and immediate comparisons between the findings from the current survey and past years' results should be done with great care.

1.2 Theoretical Framework

The theoretical foundation of GUESSS is the Theory of Planned Behavior (TPB) (Ajzen, 2002; Fishbein & Ajzen, 1975) (**Figure 1.1**). According to the theory, the intention to exhibit a specific kind of behavior is influenced by three main factors, namely attitude toward the behavior, subjective norms, and perceived behavioral control.

In the context of GUESSS, we investigate career choice aspirations and 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. We also investigate additional factors, including university context, family context, personal motives and social/cultural context that may impact the evolvement of entrepreneurial intentions through the three main elements of TPB.

Figure1.1 Theoretical Framework of GUESSS 2013/2014



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 KMU-HSG. The individual country datasets were then disseminated to the country representatives of each country.

A total of 109,026 students from 759 universities in 34 countries participated in the 2013/2014 study. At the end of the data collection, Singapore achieved 6,471 responses from the 3 public universities and 5 polytechnics.

1.4 Country Representatives

The GUESSS 2013/2014 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 (Associate Director)

Ms NG Su Juan Crystal (Senior Executive)

Table 1.1 GUESSS 2013/2014 Participating Countries, Universities and Respondents

No	Country	Responses	Valid Percent	# of universities	# addressed students	Response rate
1	Argentina (ARG)	190	.2	14	1800	10.6
2	Australia (AUS)	495	.5	6	3500	14.1
3	Austria (AUT)	4220	3.9	34	149587	2.8
4	Belgium (BEL)	402	.4	16	n.a.	n.a.
5	Brazil (BRA)	12561	11.5	104	220000	5.7
6	Canada (CAN)	509	.5	2	7436	6.8
7	Colombia (COL)	801	.7	22	5700	14.1
8	Denmark (DEN)	1027	.9	10	28000	3.7
9	England (ENG)	654	.6	20	n.a.	n.a.
10	Spain (ESP)	10545	9.7	21	126870	8.3
11	Estonia (EST)	1391	1.3	23	33880	4.1
12	Finland (FIN)	704	.6	12	33943	2.1
13	France (FRA)	332	.3	14	14450	2.3
14	Germany (GER)	10570	9.7	44	292000	3.6
15	Greece (GRE)	435	.4	8	2500	17.4
16	Hungary (HUN)	8844	8.1	31	161000	5.5
17	Israel (ISR)	1086	1.0	17	4500	24.1
18	Italy (ITA)	7765	7.1	46	142698	5.4
19	Japan (JAP)	890	.8	19	5835	15.3
20	Liechtenstein (LIE)	203	.2	2	607	33.4
21	Luxembourg (LUX)	153	.1	4	6457	2.4
22	Mexico (MEX)	637	.6	17	5000	12.7
23	Malaysia (MYS)	2452	2.2	21	7400	33.1
24	Netherlands (NED)	9907	9.1	67	268808	3.7
25	Nigeria (NGR)	7	.0	1	n.a.	n.a.
26	Poland (POL)	11860	10.9	37	115000	10.3
27	Portugal (POR)	213	.2	3	3000	7.1
28	Romania (ROM)	277	.3	10	n.a.	n.a.
29	Russia (RUS)	4578	4.2	35	28600	16.0
30	Scotland (SCO)	280	.3	11	68900	0.4
31	Singapore (SIN)	6471	5.9	9	88990	7.3
32	Slovenia (SLO)	903	.8	44	22000	4.1
33	Switzerland (SUI)	7419	6.8	33	87200	8.5
34	USA	245	.2	2	25768	1.0
	Total	109026	100.0	759	1961429	5.5

1.5 Respondent Profile at Global and Singapore

Globally, the average age of respondents is 23.1 years. This is comparable to the last GUESSS study in 2011. We also found differences of gender proportions between countries, but a reasonable average of 58.4% of females globally (**Figure 1.2**).

In Singapore, the average age of respondents is 21 years. Among them, 51% of are female students, which is comparable to the global average.

To facilitate a comparative analysis, GUESSS core team has grouped the course of study into three main categories:

- i. Business, economics, and law (BECL) which includes “Business / Management”, “Economics”, and “Law”;
- ii. Natural sciences and medicine (NSM) which comprises “Engineering and architecture”, “Mathematics and natural sciences”, “Information science / IT”, “Agricultural science, forestry, and nutrition science”; and
- iii. Social sciences” (SSC) which includes “Linguistics and cultural studies (including psychology, philosophy, religion)” as well as “Other social sciences (including education)”.

In terms of course of studies, **Figure 1.3** shows a high variation across countries. Business, economics and law students dominate in countries such as Canada, Australia and France, but natural science students represented almost all of the respondents from Portugal.

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. The majority of Singapore respondents come from the natural science and medicine courses, making up 54% of the total sample.

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 23% of the total sample while non-business school contributed 77%.

In Singapore, undergraduate students consist of both the university undergraduates (54%) and polytechnic diploma students (32%). Globally, more than three quarters of responses on average are from undergraduate students while 20% of them are from graduates (**Figure 1.4**).

Figure 1.2 Gender of Respondents across Countries

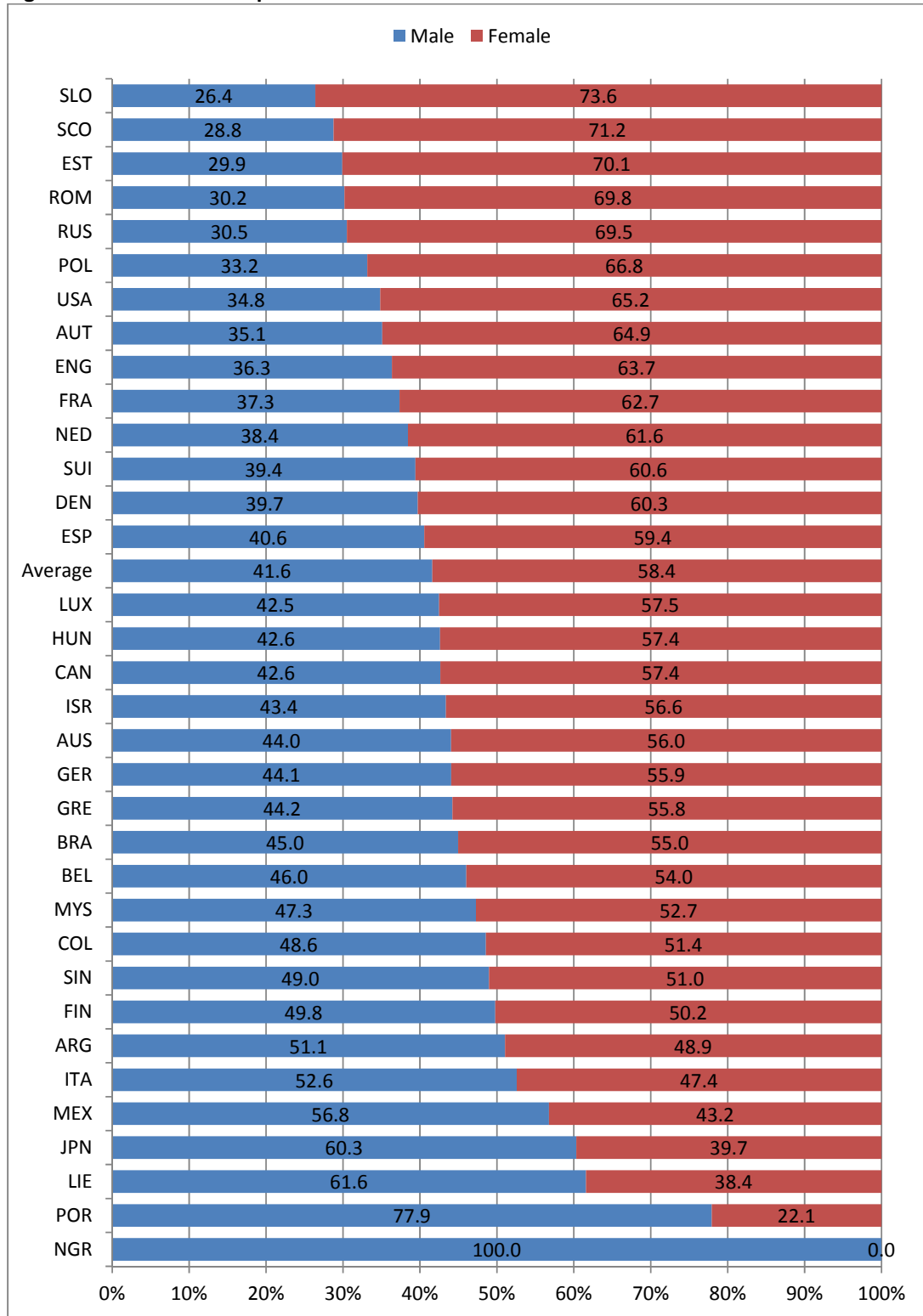


Figure 1.3 Course of Study across Countries

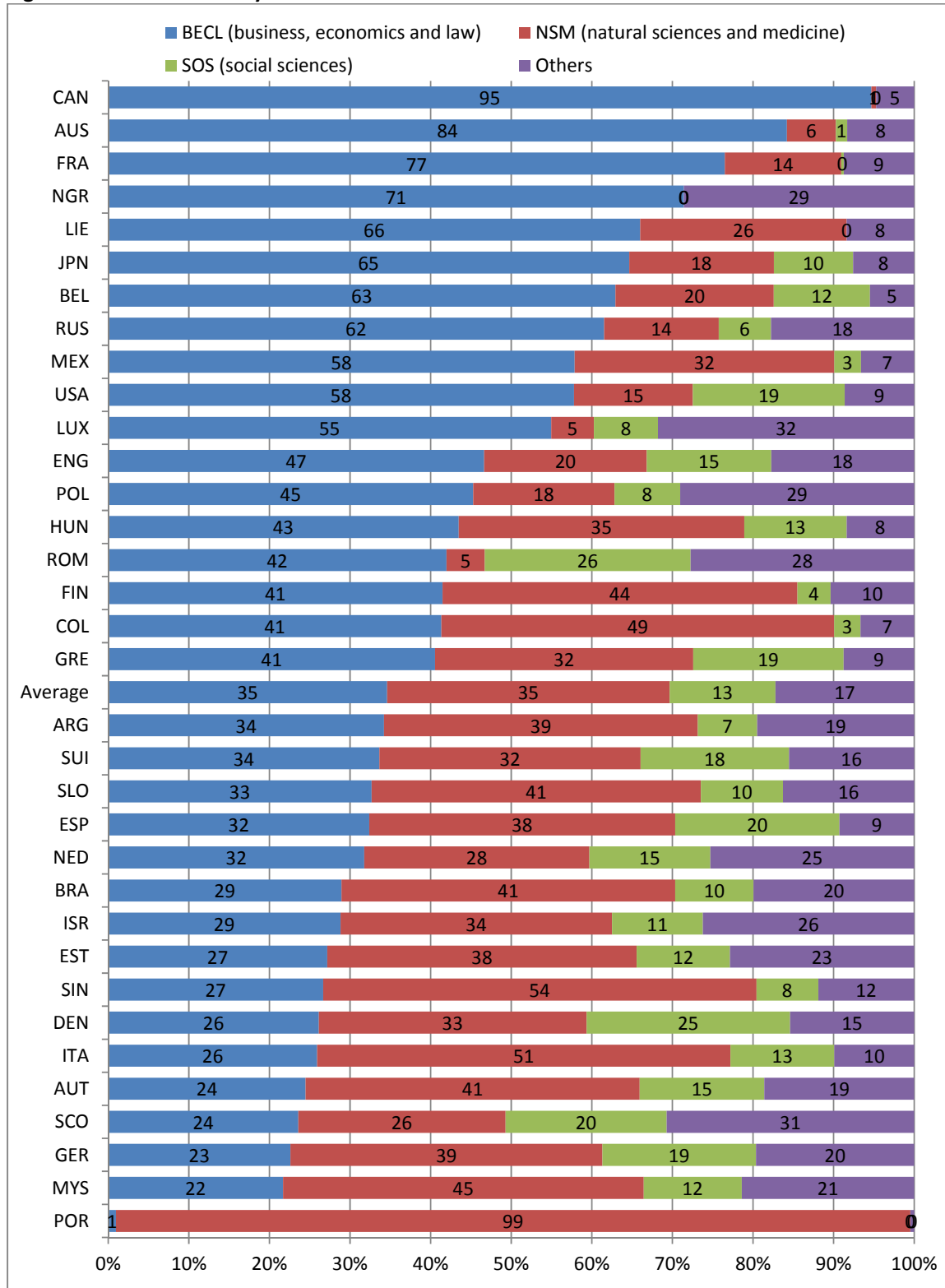
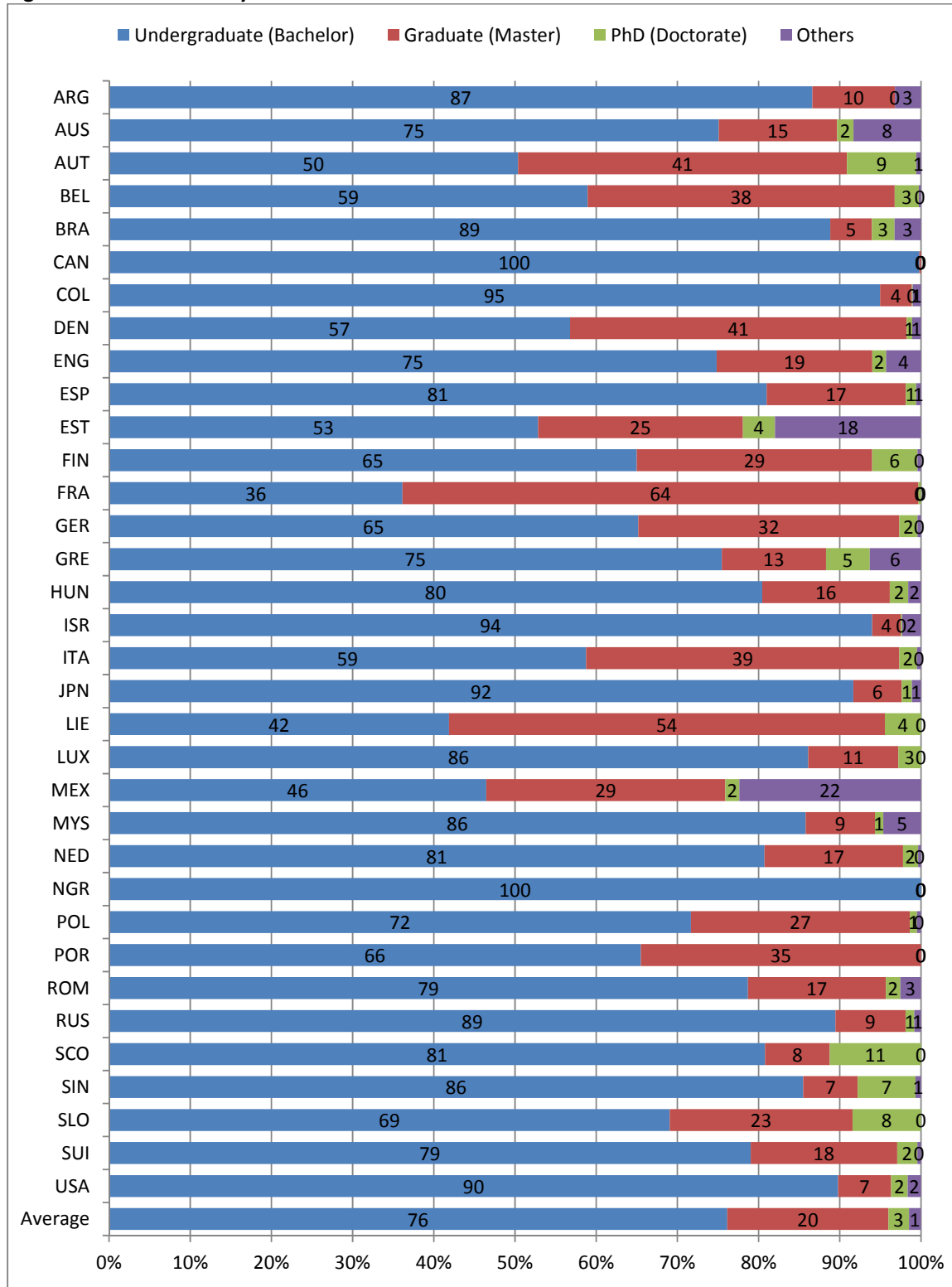


Figure 1.4 Level of Study across Countries



A total of 6,471 students from Singapore IHLs, 3 public universities (NUS, NTU and SMU) and 5 polytechnics, participated in the 2013/2014 GUESSS study. The larger proportions of respondents were from National University of Singapore (37.1%), Nanyang Technological University (21.9%) and Nanyang Polytechnic (14.8%) as shown in **Figure 1.5**. **Table 1.2** shows the proportion of business and non-business students who have participated in the study in each IHL. In most cases, non-business students make up the majority in each IHL, with the exception of SMU and Ngee Ann polytechnic.

Figure 1.5 Respondents by IHLs

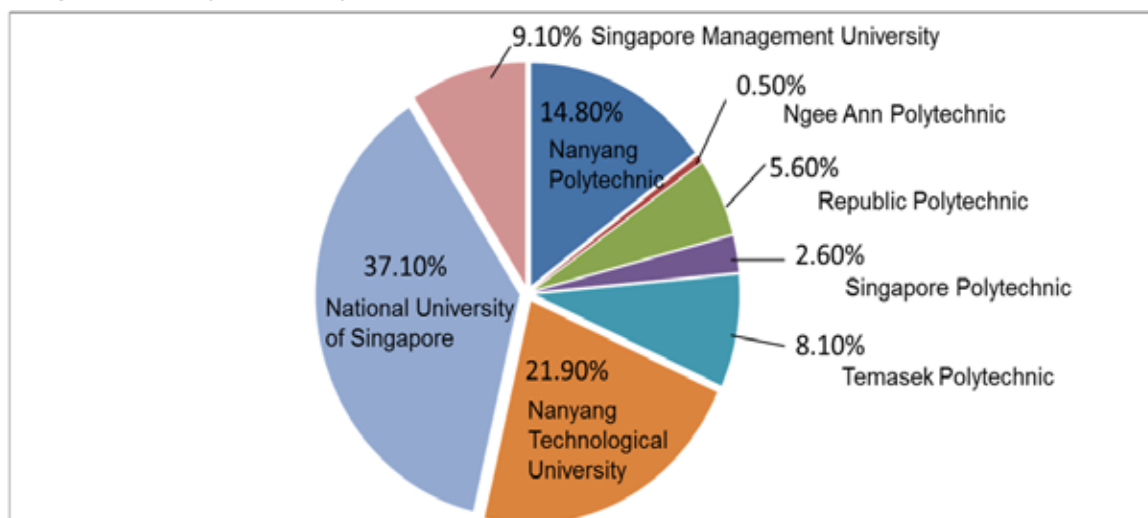
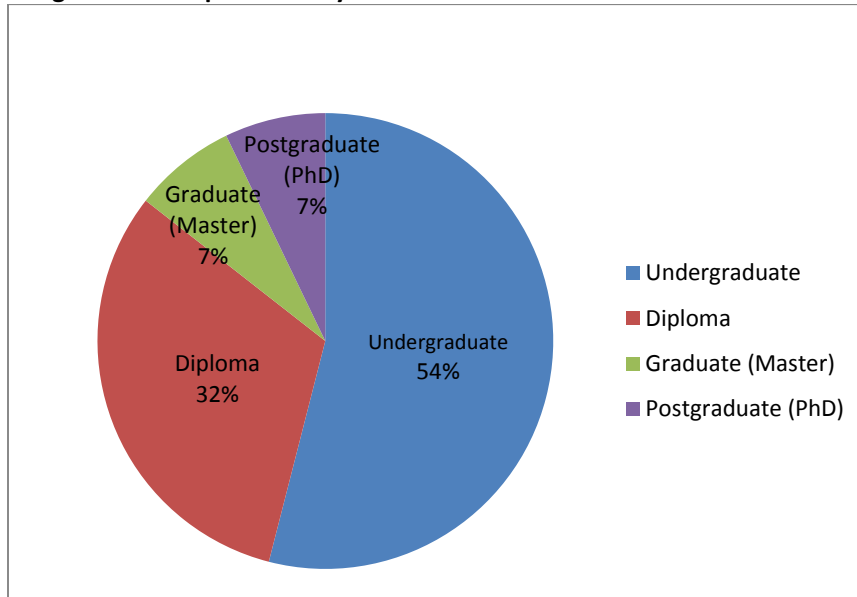


Table 1.2 Respondents by IHLs (Business vs. Non-Business)

	Business	Non-Business	Total
NUS	325 (13.6%)	2069 (86.4%)	2394
NTU	236 (16.6%)	1183(83.4%)	1419
SMU	333 (56.6%)	255 (43.4%)	588
S'pore Poly	36 (21.3%)	133 (78.7%)	169
NY Poly	186 (19.5%)	770 (80.5%)	956
Ngee Ann Poly	22 (71%)	9 (29%)	31
Temasek Poly	180 (34.2%)	347 (65.8%)	527
Republic Poly	160 (44.6%)	199 (55.4%)	359

By the level of study, 32% are diploma students from polytechnics and 68% are undergraduates / PhD / Master students from universities (**Figure 1.6**).

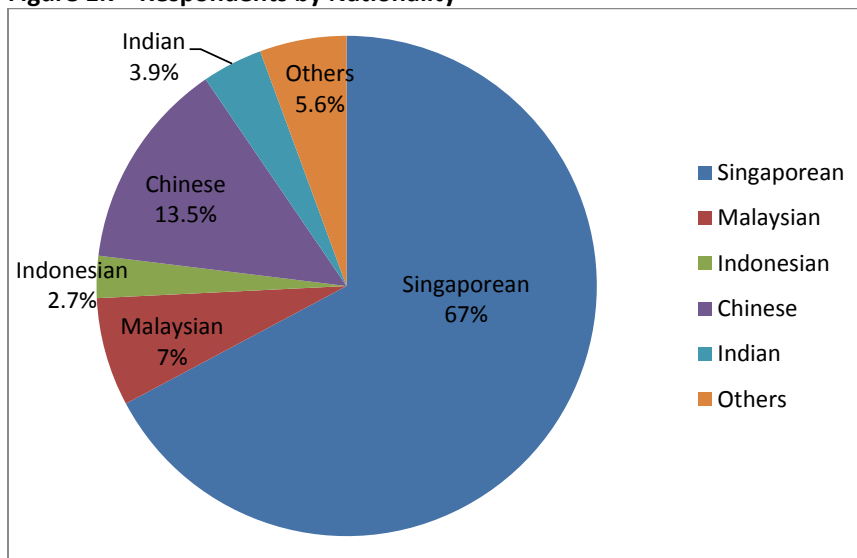
Figure 1.6 Respondents by Education Level



In the actual population of students studying in Singapore IHLs, 53% are polytechnics students and 47% are university students (Source: Education Statistics Digest 2013). 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.**

Among the respondents, 33% are foreign students of non-Singaporean nationality (**Figure 1.7**) while 33.9% come from family with entrepreneurial background.

Figure 1.7 Respondents by Nationality



2 CAREER ASPIRATIONS

2.1 Entrepreneurial Aspirations (Entrepreneurship as Career Choice)

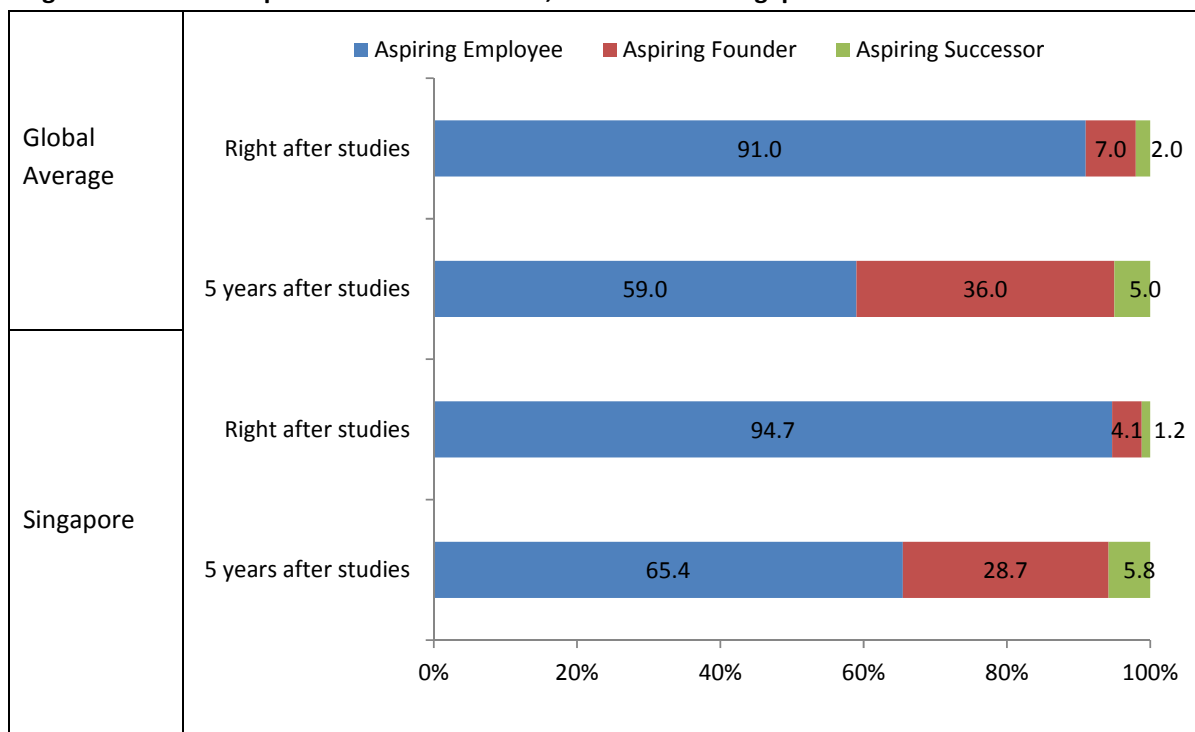
One of the most important questions in GUESSS is what students intend to do after their studies. Students were asked to indicate the career path they intended to pursue in the immediate term (directly after completing their studies) and in the longer term (5 years after completion of studies).

The students' career aspirations are summarized into four main groups:

- (i) Aspiring Employee, who seeks to work in a firm not owned by himself or family members;
- (ii) Aspiring Founder, who wishes to work in his own firm;
- (iii) Aspiring Successor, who plans to continue or take over an existing firm, whether owned by family members or others;
- (iv) Others, including non-employment or continuing further studies.

5.3% 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 2.1**). This proportion is slightly lower than the global average of 9%. A significantly higher percentage, 34.5% of Singapore students, has entrepreneurial aspirations in the longer term, 5 years after completing their studies. However, this proportion is still lower than the global average of 41%.

Figure 2.1 Career Aspirations of IHL Students, Global versus Singapore



*Note: Responses as “Fulfilling National Service duty”, “Continue Study” and “Others” were excluded to avoid ambiguities.

Figure 2.2 shows the detailed breakdown of career aspirations of Singapore IHL students in immediate and longer term, including employment aspirations, entrepreneurial aspirations, National Service obligation and study plan.

In Singapore, though only 2.4% of students aspire to be founder right after studies, the number multiplied almost tenfold to 23% after 5 years. Similarly, less than 1% of the Singapore students intend to take over an existing business immediately after their studies; in contrast, 4.6% of them aspire to be successors 5 years after their studies. The findings from Singapore GUESSS results follow the similar “first employee, then founder” pattern observed in the GUESSS 2013/2014 international findings.

Figure 2.2 Career Aspirations of Singapore IHL Students, Directly After versus 5 Years after Studies

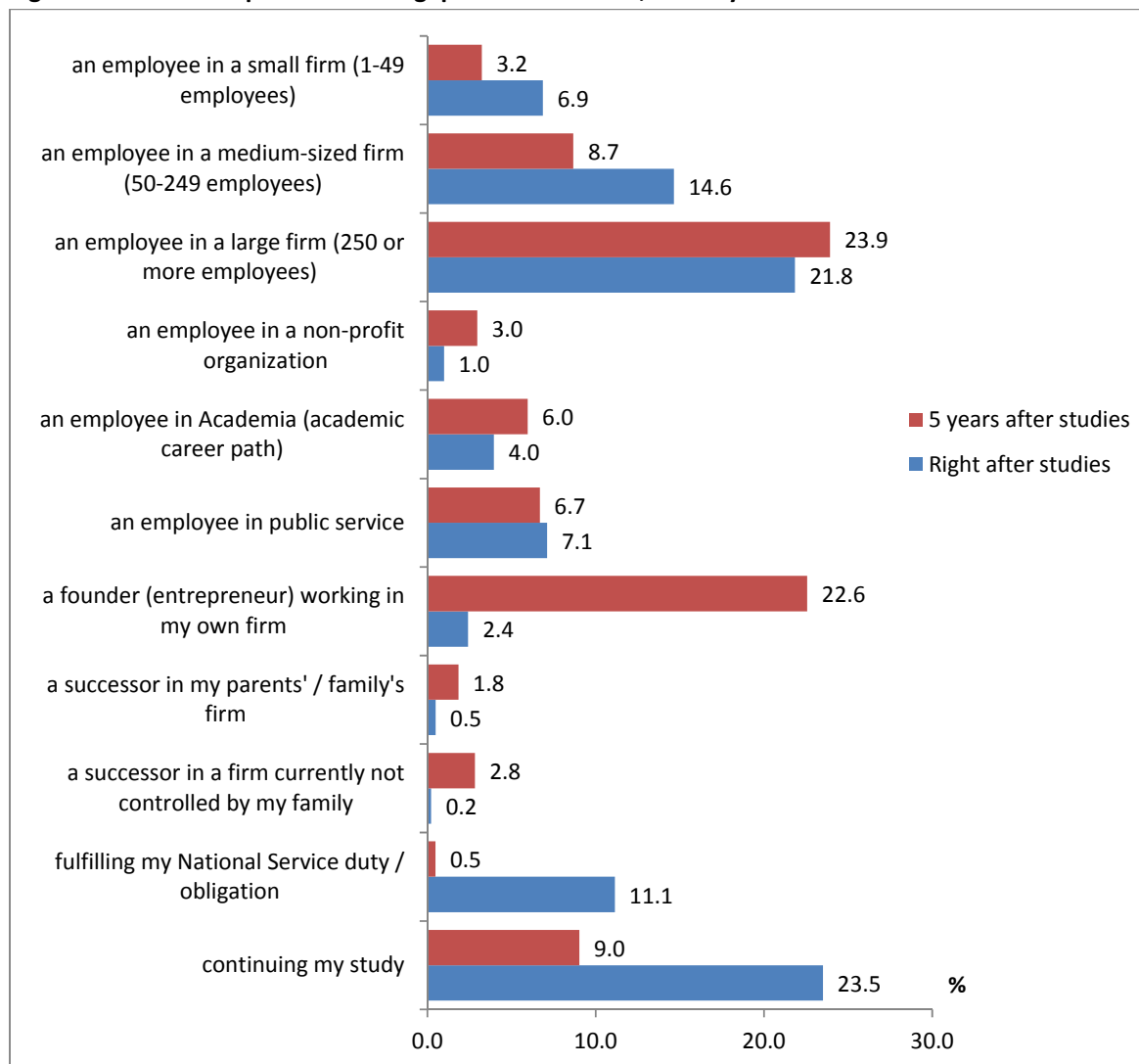
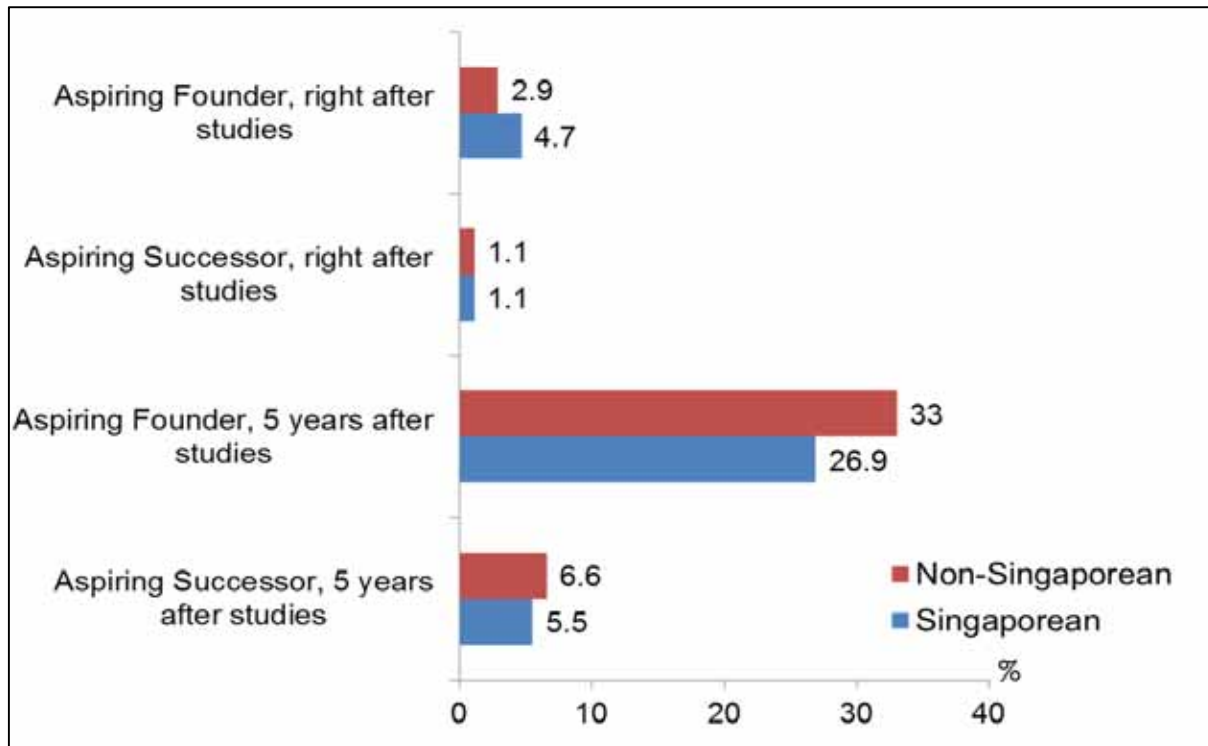


Figure 2.3 Entrepreneurial Aspiration: Local vs. Foreign students

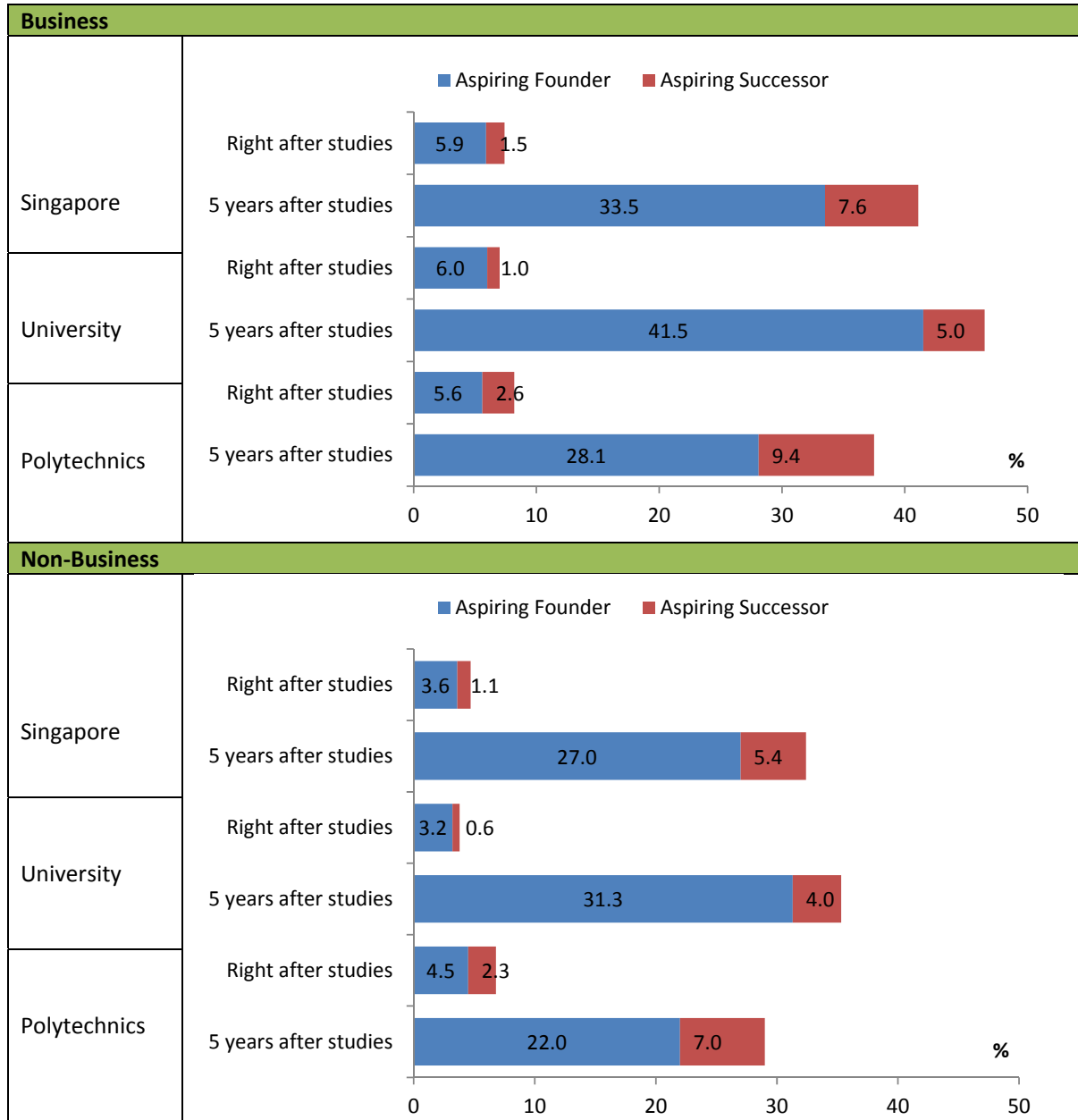


Comparing local and foreign students in Singapore IHLs, short-term entrepreneurial aspiration is more prevalent among local students (4.7% aspiring founders) than foreign students (2.9%). However, this trend is reversed in the longer term with higher proportion of aspiring founders among foreign students (33%) than local students (27%). (Figure 2.3)

Figure 2.4 shows the comparisons of entrepreneurial aspirations among Singapore IHL students studying in university and polytechnics, comparing those from business school and non-business school.

In general, business students indicated greater entrepreneurial aspiration compared to non-business students, in both immediate and longer terms. Among the students from business school, a greater proportion of students from polytechnic demonstrated short term entrepreneurial aspirations (8.2% compared to university 7%). On the other hand, the percentage of university students with long term entrepreneurial aspirations is significantly higher (46.5% compared to polytechnic of 37.5%). This implies that a larger proportion of university students will actually prefer to spend some time working in a salaried job before they engage in entrepreneurial activities.

Figure 2.4 Aspiring Founder and Aspiring Successor among Singapore IHL Students

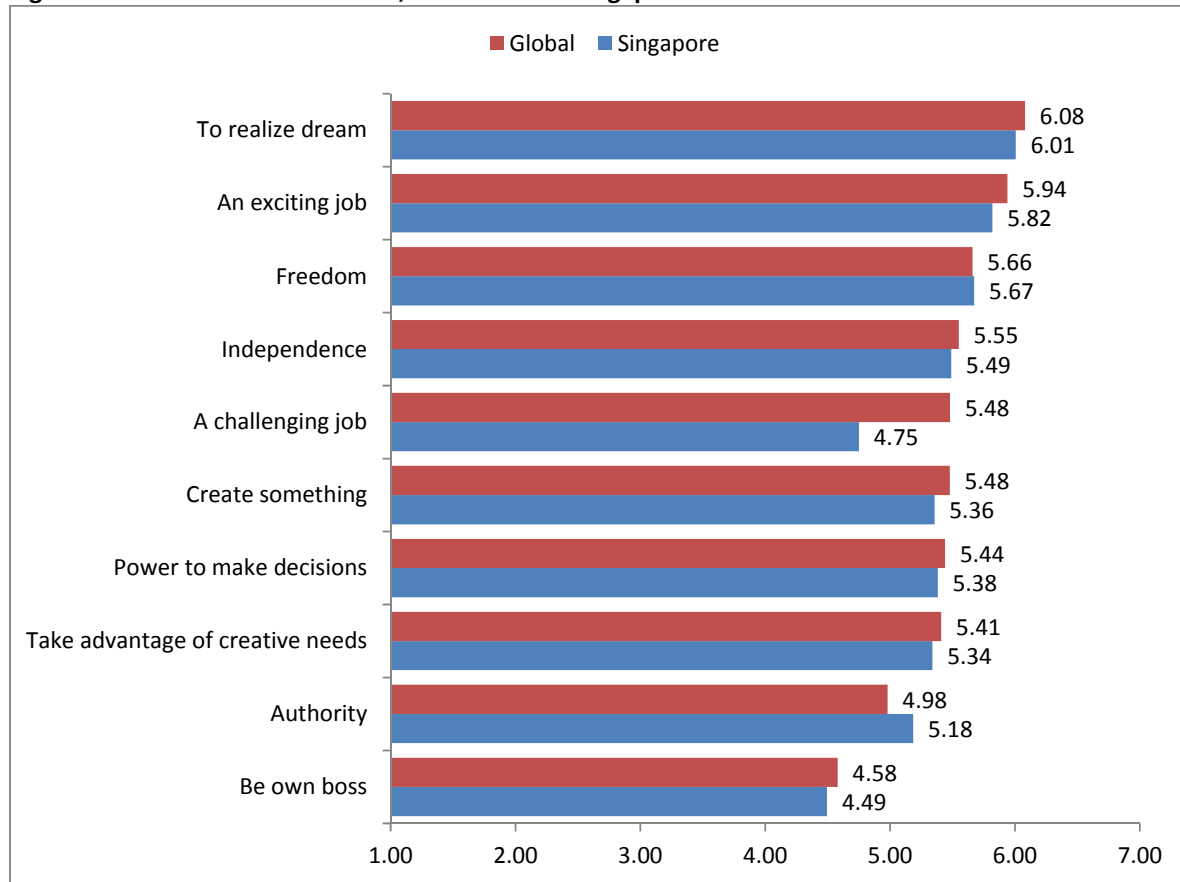


2.2 Career Motives of Students

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.

Similar to the students across the global sample, the three most important motives to Singapore students are to realize own dream, to have an exciting job and to have freedom (**Figure 2.5**). However, Singapore students are observed to value the importance of 'authority' as a career choice motive more critically (5.18 compared to global average of 4.98) compared to the students from other countries.

Figure 2.5 Career Choice Motives, Global versus Singapore

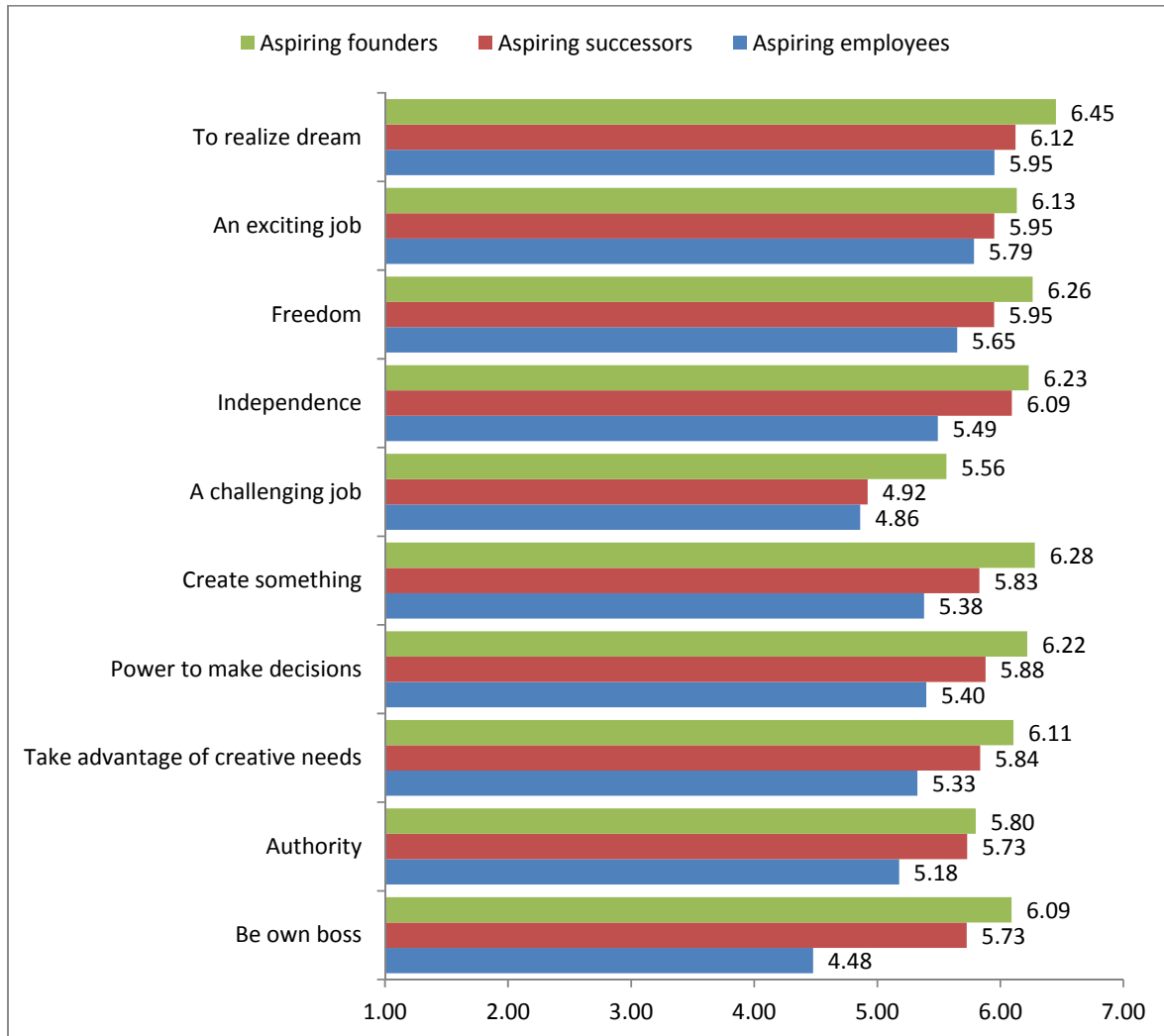


Importance of career motives rated on 7-point scale where 1 = not important and 7 = very important

Research has shown that different motives have a significant effect on students' aspiration to become employees, founders or successors (Zellweger, Sieger & Halter, 2011). More importantly, the motive of being one's own boss is a significant driver of entrepreneurial career aspirations. In fact, we note that the career motive of being one's own boss has the highest disparity among the different career aspiration groups. (**Figure 2.6**) Students who aspire to found a new business are more strongly motivated to be their own boss (6.09 on a scale of 1 to 7) compared to those who aspire to be salaried employees (mean rating of 4.48). Those who aspire to succeed to an existing business are also strongly motivated to be their own boss (mean rating of 5.73).

Several career choice motives differ significantly across students with different career aspirations as well. While aspiring founders are strongly motivated to create something (6.28), aspiring employees are more concerned about having an exciting job (5.79) instead. Those who aspire to be successors to an existing business are also found to value the importance of independence (among the top 3 motives for aspiring successors but not for aspiring founders and employees) as a career choice motive much more than aspiring founders and employees. Please refer to **Annex A** for career choice motives according to career aspirations, 5 years after studies.

Figure 2.6 Career Choice Motives according to Career Aspirations, right after studies



Importance of career motives rated on 7-point scale where 1 = not important and 7 = very important

3 FACTORS INFLUENCING STRENGTH OF ENTREPRENEURIAL INTENTIONS

3.1 Entrepreneurial Intentions

Before we begin to examine the various potential determinants of entrepreneurial intentions, it will be ideal to take a closer look at entrepreneurial intentions of students in Singapore as a whole.

In this edition of GUESSS, a new measure of entrepreneurial intentions was introduced. The students were asked to indicate their level of agreement to a number of statements that capture their intention to become an entrepreneur in the future (**Table 3.1**). An aggregated entrepreneurial intention measure was generated by calculating the average of all six answers rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree. The strength of entrepreneurial intention provides an indication of students' level of interest in entrepreneurship.

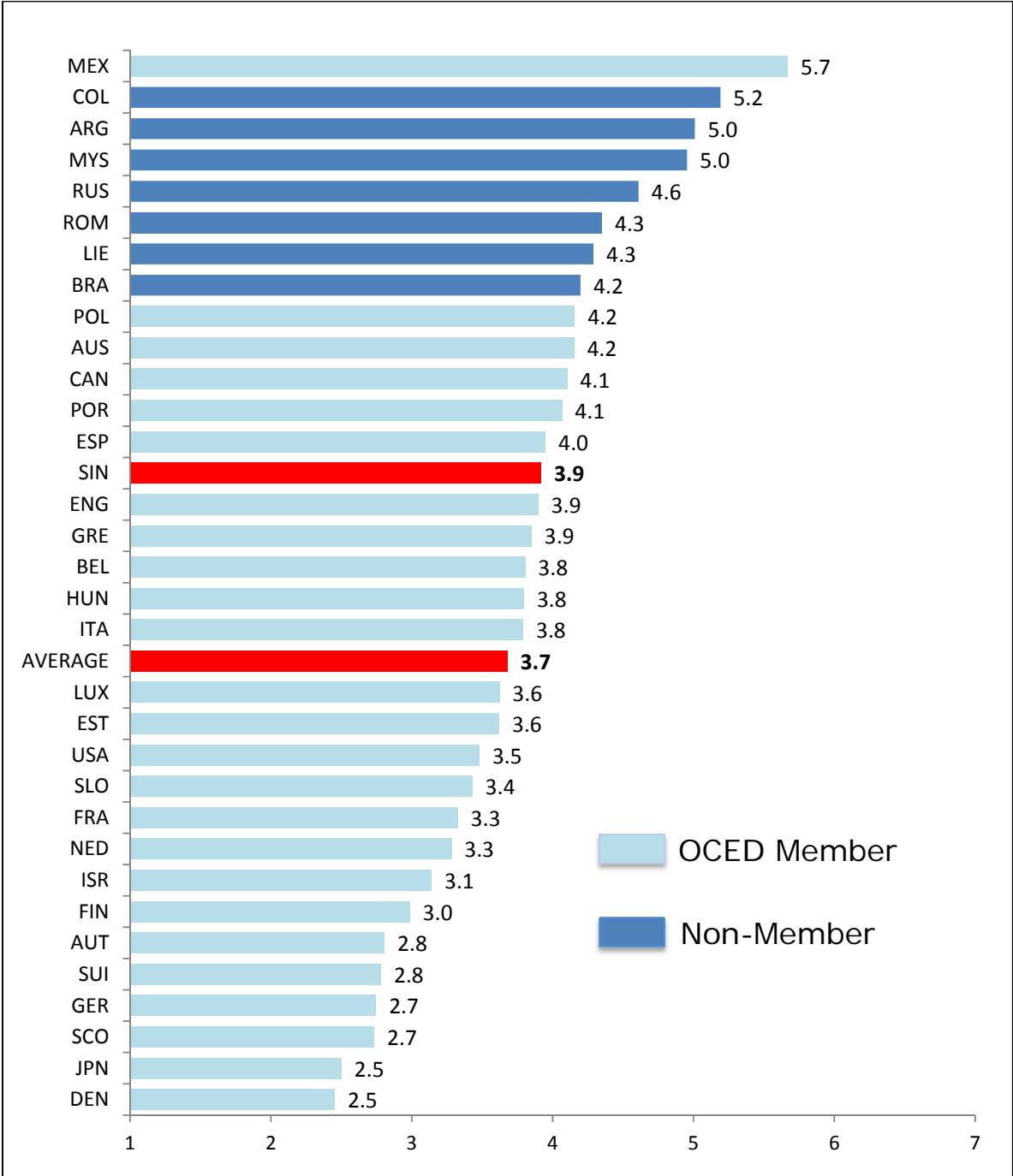
Table 3.1 Entrepreneurial Intention Statements

No	Statement
1	I am ready to do anything to be an entrepreneur.
2	My professional goal is to become an entrepreneur.
3	I will make every effort to start and run my own firm.
4	I am determined to create a firm in the future.
5	I have very seriously thought of starting a firm.
6	I have the strong intention to start a firm someday.

Globally, the strength of entrepreneurial intention is 3.7. In Singapore, the average intention is slightly higher, with average ratings of 3.9 on a scale of 1 to 7 (**Figure 3.1**).

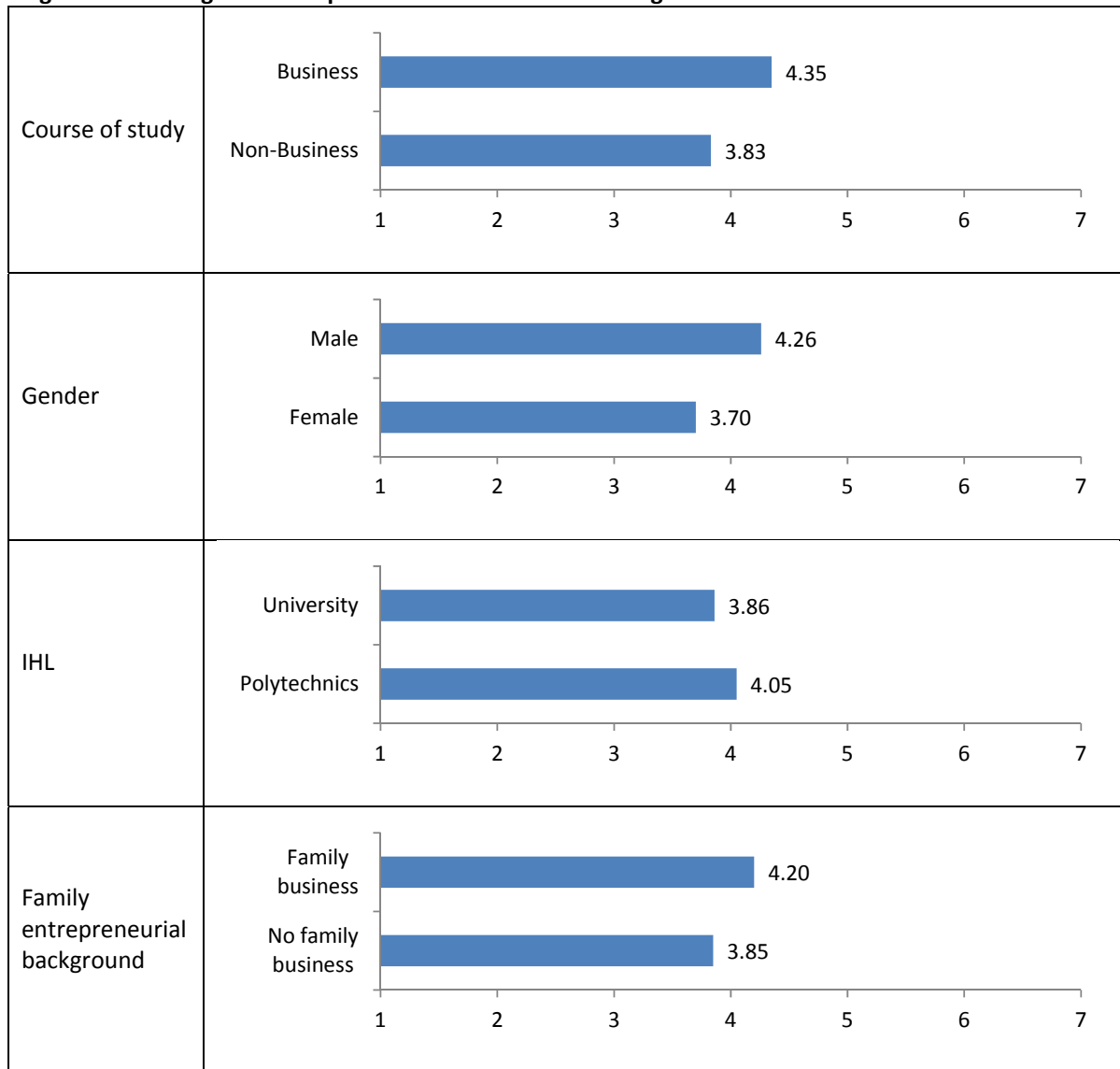
Figure 3.2 shows the detailed breakdown of entrepreneurial intentions among Singapore students. In general, Singapore students from business school expressed higher entrepreneurial intentions than students from non-business school. Male and polytechnic students also shown stronger intention in entrepreneurship compared to university students while students who come from family backgrounds with family businesses demonstrated stronger intentions in entrepreneurship as well.

Figure 3.1 Strength of Entrepreneurial Intentions across Countries



Strength of entrepreneurial intention rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

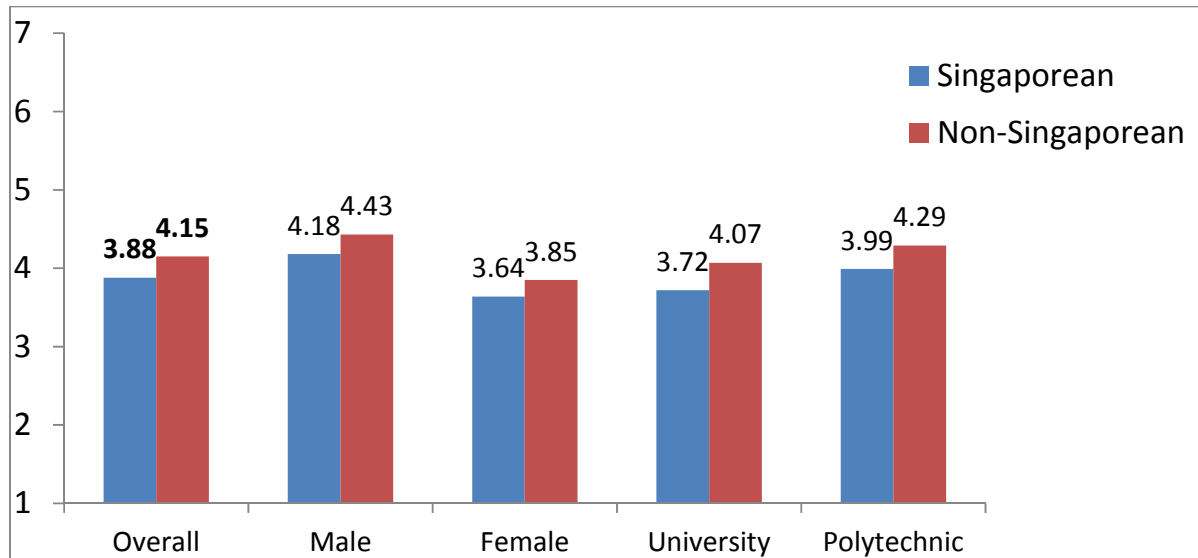
Figure 3.2 Strength of Entrepreneurial Intentions according to Students' Profile



Strength of entrepreneurial intention rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

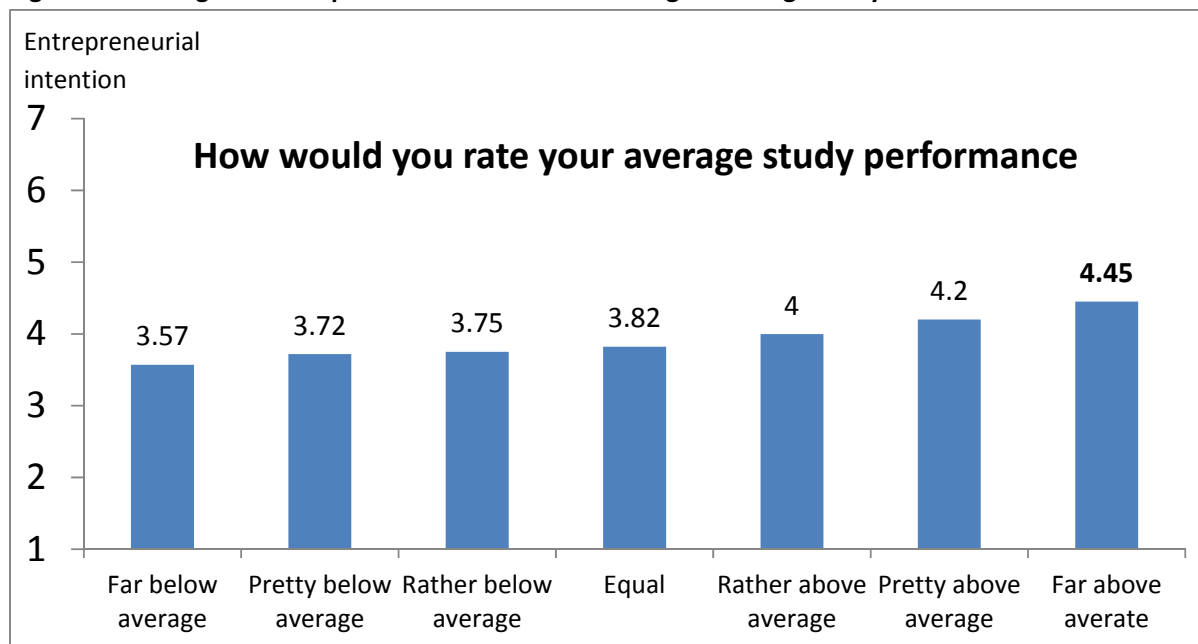
Taking a closer look at the strength of entrepreneurial intentions by nationality and average study performance, aggregated entrepreneurial intention among Singapore students (3.88) is found to be weaker compared to non-Singaporeans (4.15). (Figure 3.3) The same trend is observed across gender and IHLs as well. Females in general, are noted to have lower entrepreneurial intention strength regardless of nationality. Interestingly, aggregated strength of entrepreneurial intention is observed to be positively correlated with average study performance. (Figure 3.4) Students who rate themselves higher in their average study performances are found to have stronger entrepreneurial intention strength. Strongest entrepreneurial intention strength (4.45) reported among students, comes from those who indicated that their average study performances are far above average.

Figure 3.3 Strength of Entrepreneurial Intentions by Nationality



Strength of entrepreneurial intention rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

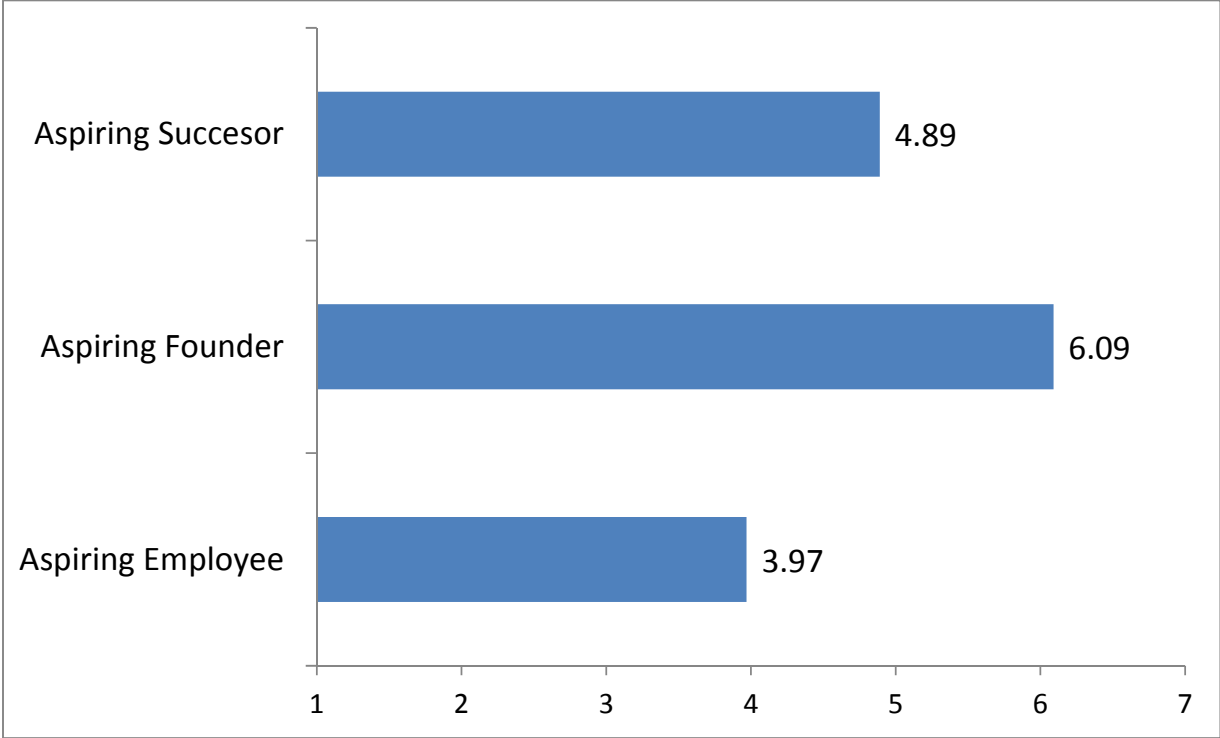
Figure 3.4 Strength of Entrepreneurial Intention according to Average Study Performance



Strength of entrepreneurial intention rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

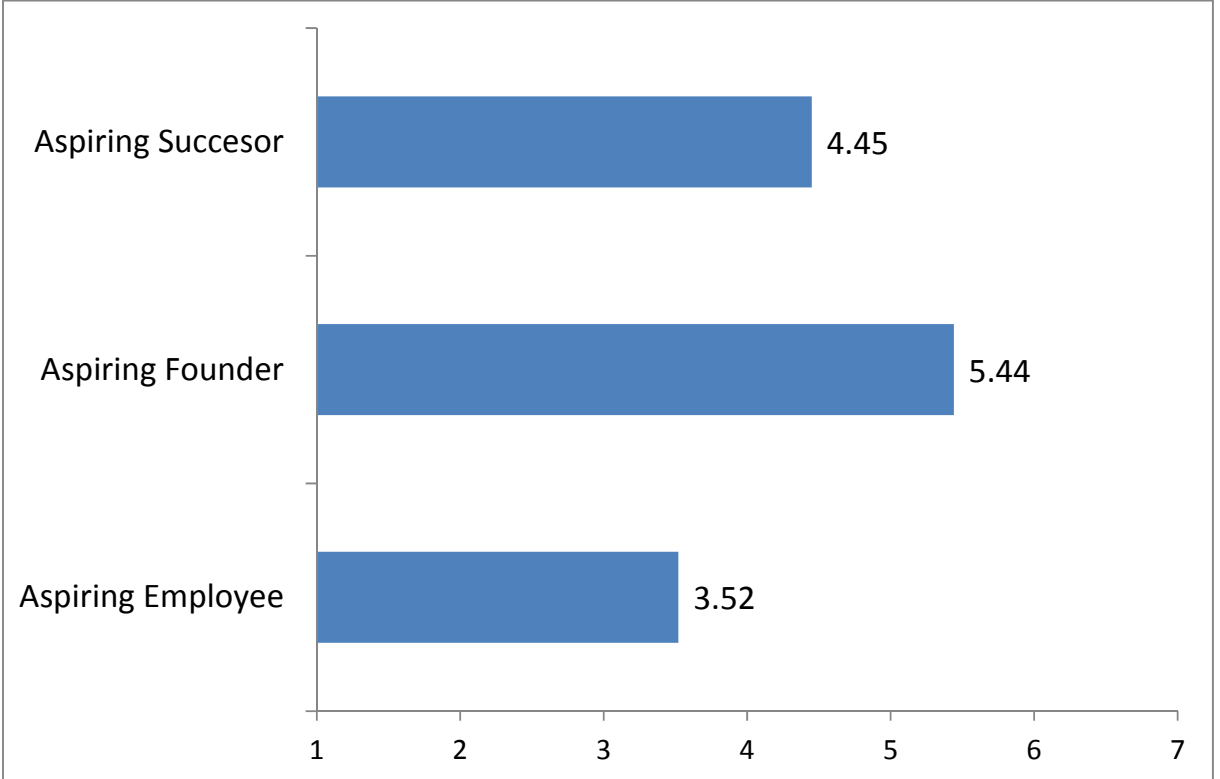
As expected, strength of entrepreneurial intention is the strongest for aspiring founder right after studies (6.09 measured on a 7-point scale) followed by aspiring successor (4.89) and lastly, aspiring employee at the weakest of 3.97. **(Figure 3.5)** A similar trend is observed for career aspirations 5 years after studies. In general, the aggregate strength of entrepreneurial intention is lower among students with entrepreneurial intentions 5 years after studies (aspiring founders and successors) compared to right after studies. **(Figure 3.6)**

Figure 3.5 Aggregate Strength of Entrepreneurial Intention by Career Aspiration right after studies



Strength of entrepreneurial intention rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

Figure 3.6 Aggregate Strength of Entrepreneurial Intention by Career Aspiration 5 years after studies



Strength of entrepreneurial intention rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

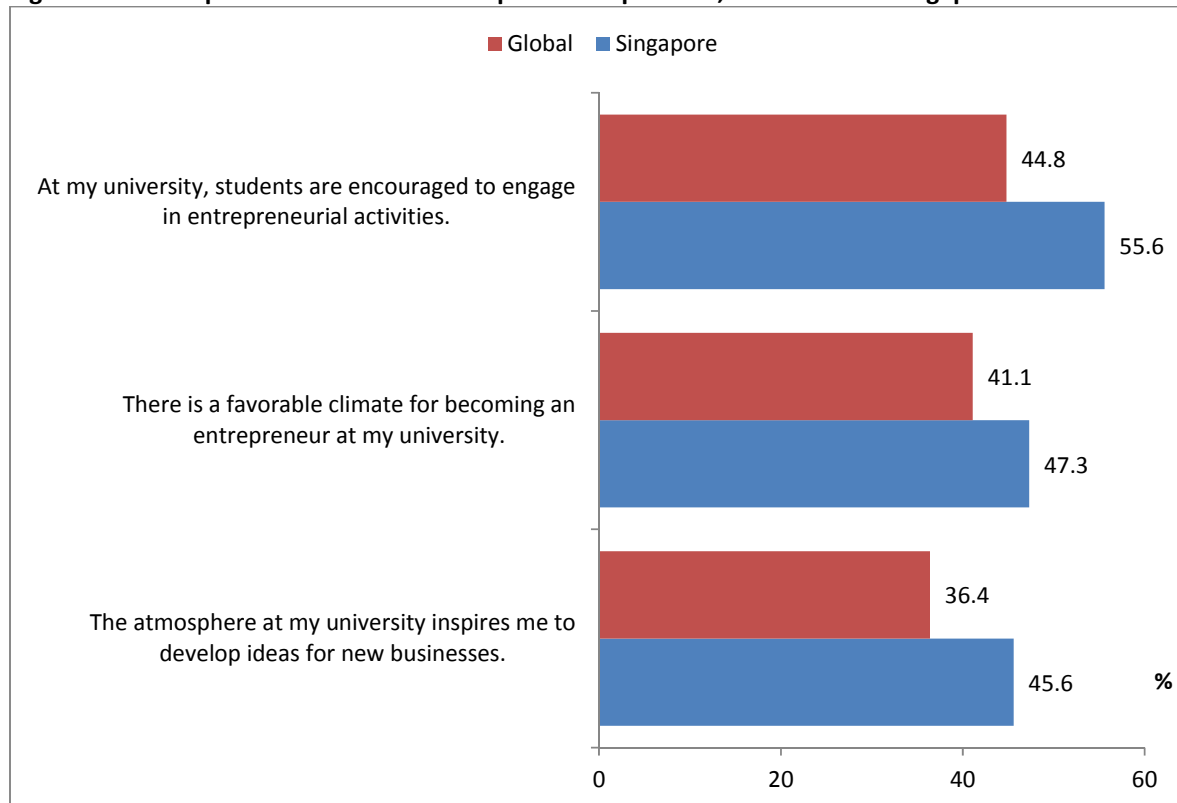
3.2 The Role of IHLs

One of the important elements of the GUESSS research model is the role of IHLs in the context of entrepreneurial intentions. In particular, we examine to what extent the role of IHLs in Singapore, through the provision of a favourable environment for entrepreneurship, providing courses relating to entrepreneurship, and the level of participation in IHL entrepreneurship programs can help to encourage entrepreneurial intentions among students.

3.2.1 Perception of Climate for Entrepreneurship in IHLs

56% of Singapore students indicated that their IHLs encourage students to engage in entrepreneurial activities (Figure 3.7). Furthermore, close to half of the students agree that IHLs provide a favourable climate for them to become entrepreneurs and the IHLs’ atmosphere inspire students to develop ideas for new ventures. These proportions are higher than the global averages.

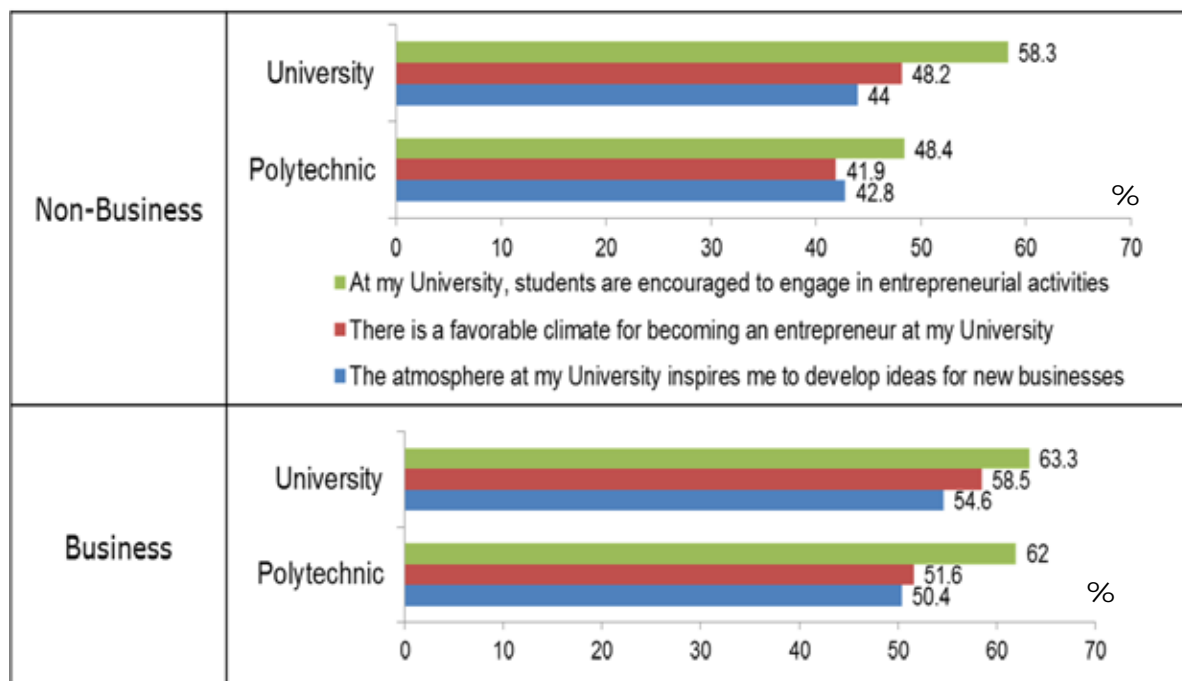
Figure 3.7 Perception of Climate for Entrepreneurship in IHLs, Global versus Singapore



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

In Singapore, more university students perceived IHLs to provide favourable climate and atmosphere that inspire entrepreneurship (**Figure 3.8**). Generally, more students from business school agree that their IHLs encourage entrepreneurship compared to their counterparts from non-business school. Please refer to **Annex B** for the perception of climate for entrepreneurship by career aspiration directly and 5 years after studies.

Figure 3.8 Perception of Climate for Entrepreneurship in IHLs across IHLs and Field of Study



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

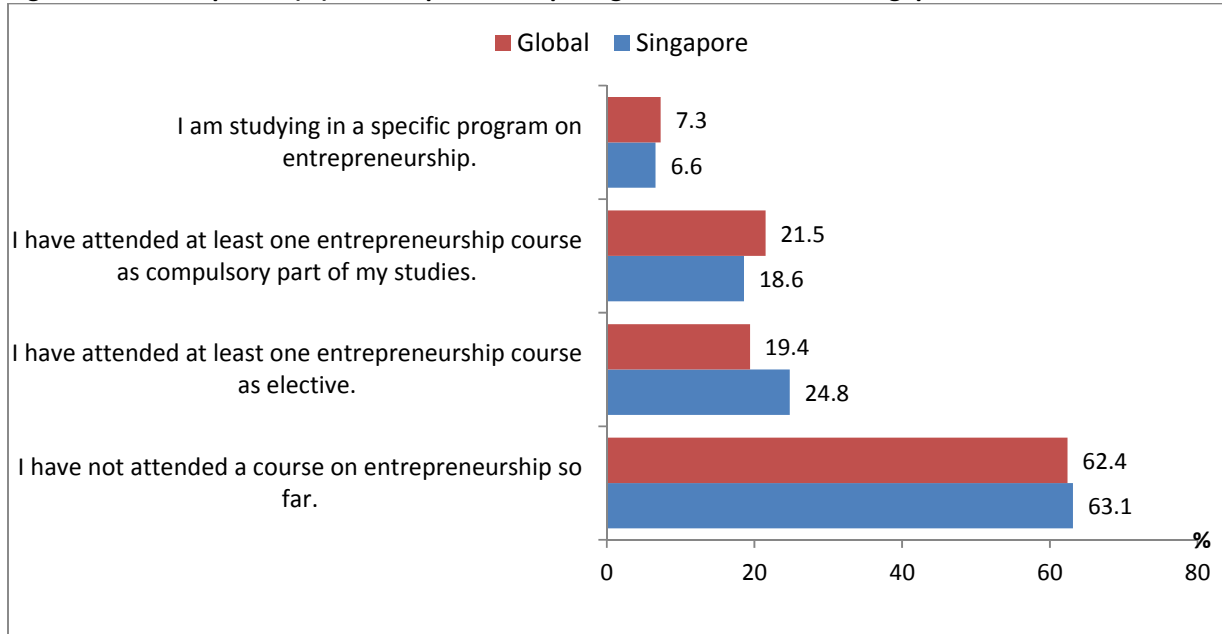
3.2.2 Participation in Entrepreneurship Programs

Students were asked about their participation in entrepreneurship programs offered by the IHLs.

In Singapore, less than one-tenth of the IHL students are studying in a specific program on entrepreneurship while one-fifth of them have attended at least one entrepreneurship course as compulsory or elective course (**Figure 3.9**). However, almost two-third of Singapore students has not attended any entrepreneurship program. These proportions are comparable with global average.

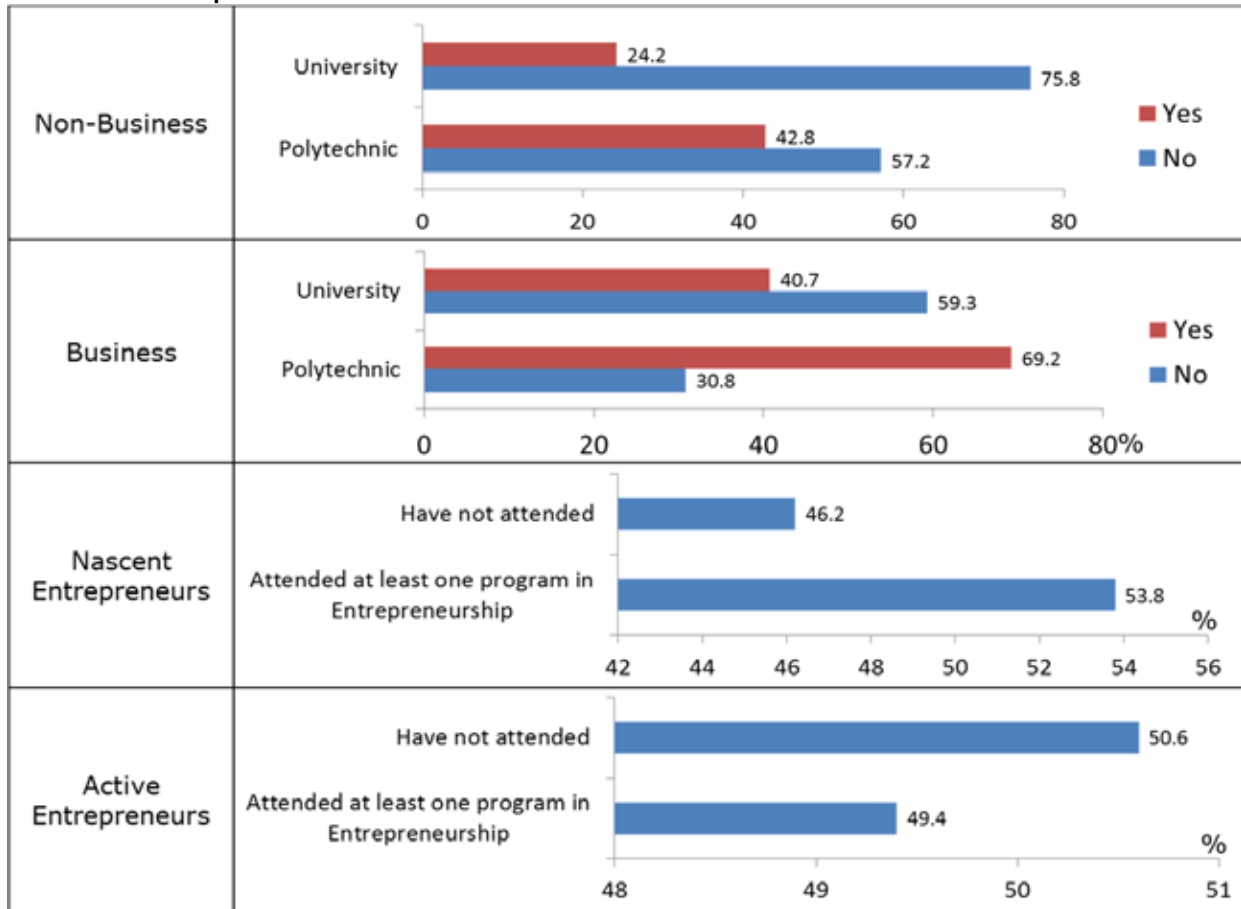
The detailed breakdown of entrepreneurship programs participation for Singapore students is presented in **Figure 3.10**. Participation in entrepreneurship programs is significantly higher among students from business school, polytechnic students and students with short-term entrepreneurial intentions (aspiring founders and aspiring successors right after studies). Please refer to **Annex C** for figures on the participation in entrepreneurship programs by career aspirations right after studies and 5 years after. More than half of nascent entrepreneurs (53.8%) and close to half of active entrepreneurs (49.4%) in Singapore have also participated in at least 1 entrepreneurship program.

Figure 3.9 Participation (%) in Entrepreneurship Programs, Global versus Singapore



*Multiple answers possible

Figure 3.10 Participation (%) in Entrepreneurship Programs across IHLs, Field of Study, Nascent & Active Entrepreneurs



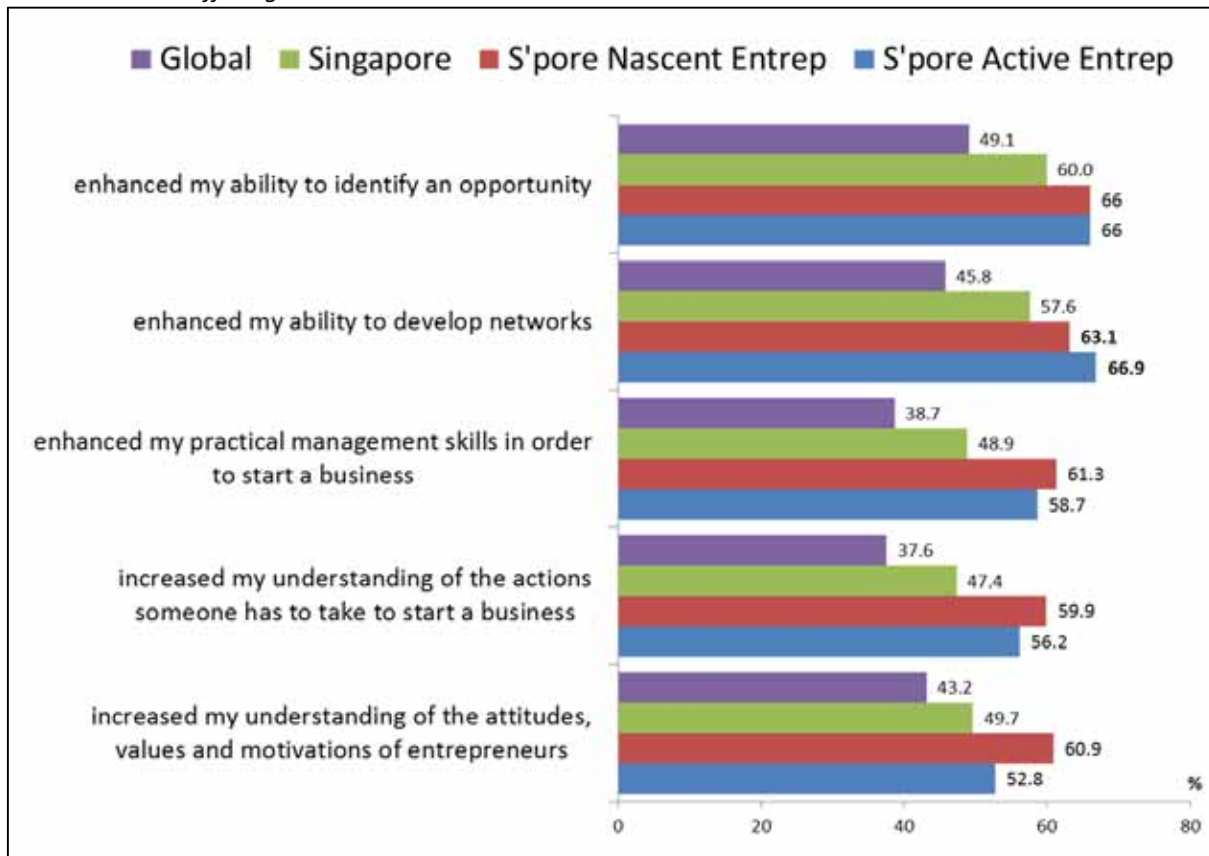
*Multiple answers possible

3.2.3 Perception of Offerings by IHLs

Beyond the students' perceptions regarding the entrepreneurship climate at their IHLs, we examine the perceived benefits of attending entrepreneurship programs offered at IHLs. In comparison to the global average, Singapore IHLs are perceived to provide programs that are much more helpful in equipping students with knowledge about entrepreneurship and skills to become an entrepreneur. In particular, nascent and active entrepreneurs indicated that they have benefitted immensely from the entrepreneurial programs with two-thirds of nascent and active entrepreneurs reporting that the programs have enhanced their ability to identify an opportunity. (Figure 3.11)

Figure 3.11 Perception of Offerings by IHLs, Global versus Singapore

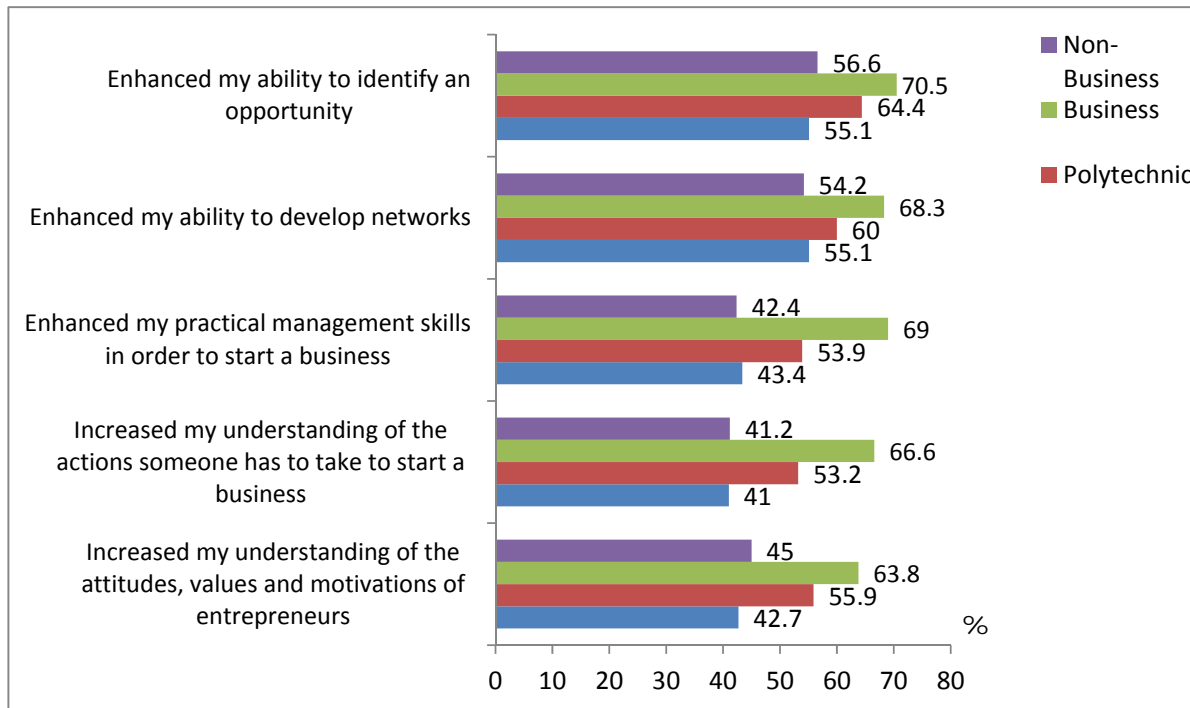
The courses and offerings I attended...



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

More than half of the Singapore students perceived that attending their IHLs' entrepreneurial programs enhanced their ability to identify opportunity and develop networks. Close to half the students agreed that their IHL education enhanced their practical management skills and increased their understanding on the demands of entrepreneurship. Perception of offerings among polytechnic students and students from business school are more positive, with close to two-thirds of business students indicating that the offerings have increased their understanding of the attitudes, values and motivations of entrepreneurs. (Figure 3.12) Please refer to **Annex D** for the perception of offerings by short and long-term career aspirations.

Figure 3.12 Perception of Offerings by Singapore IHLs across IHLs & Field of Study



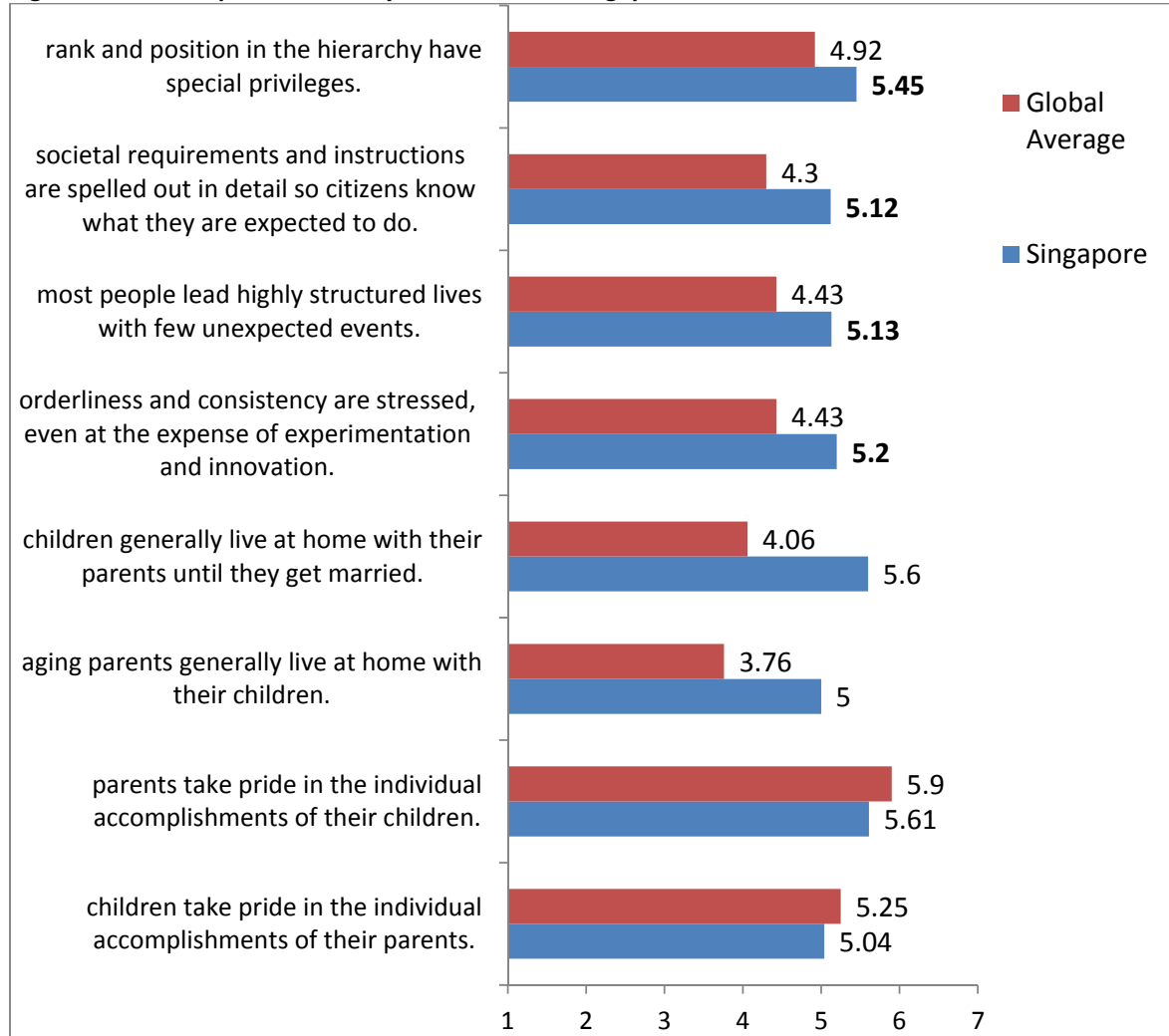
Percentage (%) of rating 5 or higher on 7 point scale where 1=strongly disagree and 7=strongly agree

3.3 The Role of Society

As societal and cultural factors have an important effect on the formation of entrepreneurial intentions, we investigate if the entrepreneurial intentions of students are moderated by their perceptions of society. Specifically, we asked students a range of questions about the environment of the society they live in and to indicate their level of agreement to the statements, rated on a 7-point scale.

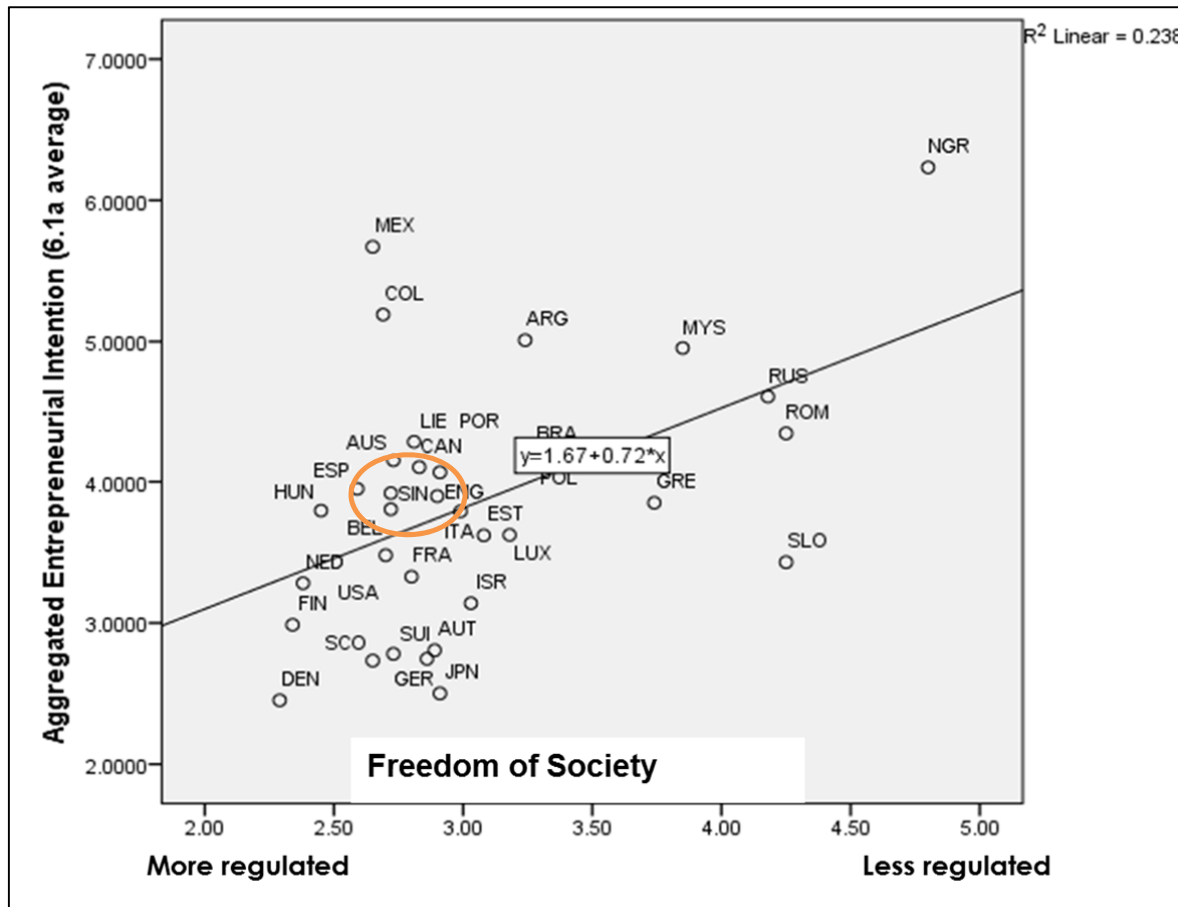
Relative to the global average, students in Singapore IHLs tend to perceive local society as much more rigid and highly structured, where orderliness and consistency are stressed (5.2 compared to global average of 4.43), societal requirements and instructions are spelled out in detail (5.12 compared to 4.3) and rank and position in the hierarchy have special privileges (5.45 compared to 4.92). **(Figure 3.13)** The comparisons between different career aspiration groups revealed that while aspiring founders right after studies have a more rigid view of Singapore’s society, aspiring successors are found to have a stronger perception that rank and position in the hierarchy have special privileges. Please refer to **Annex E** for the figures on the perception of society by career aspirations right after studies and 5 years after.

Figure 3.13 Perception of Society, Global versus Singapore



Perception of Society rated on scale where 1= strongly disagree and 7= strongly agree

Figure 3.14 Relationship between Perception of Society and Entrepreneurial Intentions



Perception of Society and Aggregated Entrepreneurial Intentions rated on scale where 1= strongly disagree and 7= strongly agree

For better insights into the relationship between societal regulation and entrepreneurial intentions, we plot the responses of students against aggregated entrepreneurial intentions. Students were asked on their level of agreement to the statement “my society has rules or laws to cover”, 1- almost all situations and 7-very few situations measured on a 7-point scale. A lower value indicates a more highly regulated society. Typically, we would find that societies with greater regulation tend to have lower entrepreneurial activities. As expected, we see a positive association between more freedom (lower regulation) in society and higher entrepreneurial intentions. Countries with higher entrepreneurial intentions like Greece and Brazil tend to be less regulated. In contrast, the level of entrepreneurial intentions in more regulated countries like Denmark and Finland is much lower. In Singapore’s case, our analysis suggest that given the degree of perceived regulation of society, the strength of student entrepreneurial intention in Singapore is higher than would be expected. (Figure 3.14)

3.4 Personal Characteristics

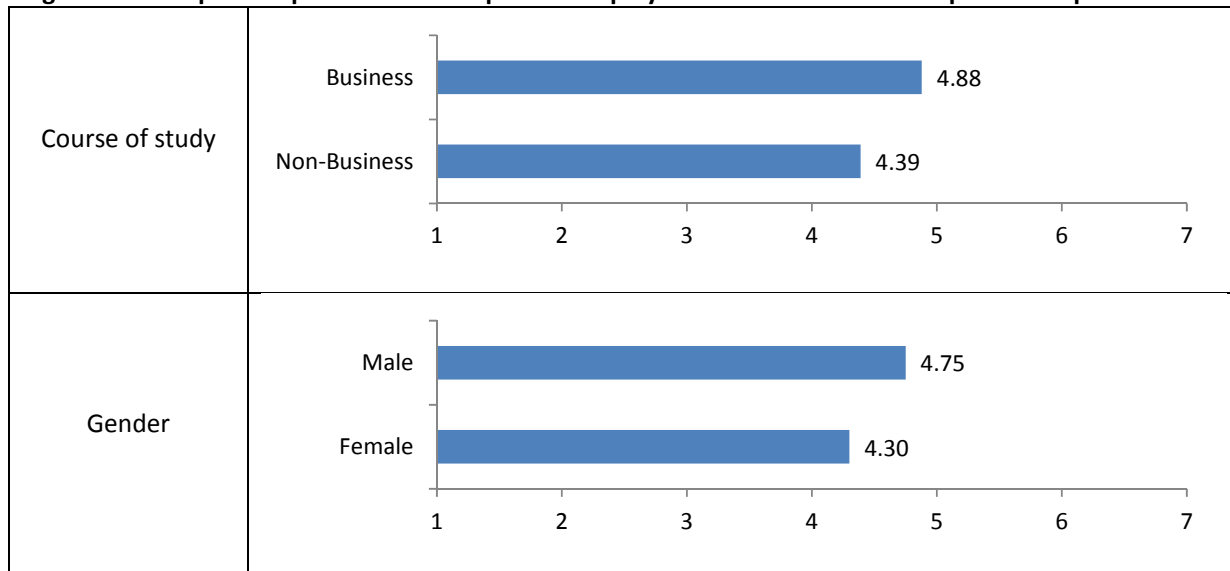
The GUESSS framework is premised on the theory of planned behavior (Ajzen, 2002) which describes how attitudes and beliefs translate into intention and behavior. Three types of beliefs form the basis of planned behavior: behavioral beliefs, normative beliefs and control beliefs. Behavioral beliefs address expected outcomes and are measured in the GUESSS framework by implied impression of entrepreneurship. Normative beliefs refer to the perceived expectations of important referent individuals such as the person's family or friends. In the GUESSS framework, normative beliefs are measured by the importance placed by students on the opinions of family members and friends. 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 section examines the Singapore IHL students' impression of entrepreneurship, the influence of opinions of important people in their lives, the competence and control over their entrepreneurial ventures and lastly, their risk perceptions and attitudes towards risk-taking.

3.4.1 Impression of Entrepreneurship

Students were asked about their implied impression on entrepreneurship; if entrepreneurship infers advantages or satisfactions, and the attractiveness of entrepreneurship as a career (**Figure 3.15**). Business students reported significantly more favorable impressions of entrepreneurship compared to non-business students. Male students showed more positive perceptions compared to female students. The various impressions of entrepreneurship across IHLs and field of study are detailed in **Annex F**. Not surprisingly, aspiring founders are noted to have the most positive impressions of entrepreneurship, followed by aspiring successors and lastly, those with non-entrepreneurial aspirations have the least favorable view of entrepreneurship.

Figure 3.15 Implied Impression of Entrepreneurship by Students' Profile & Entrepreneurship Status





Implied impression of entrepreneurship rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

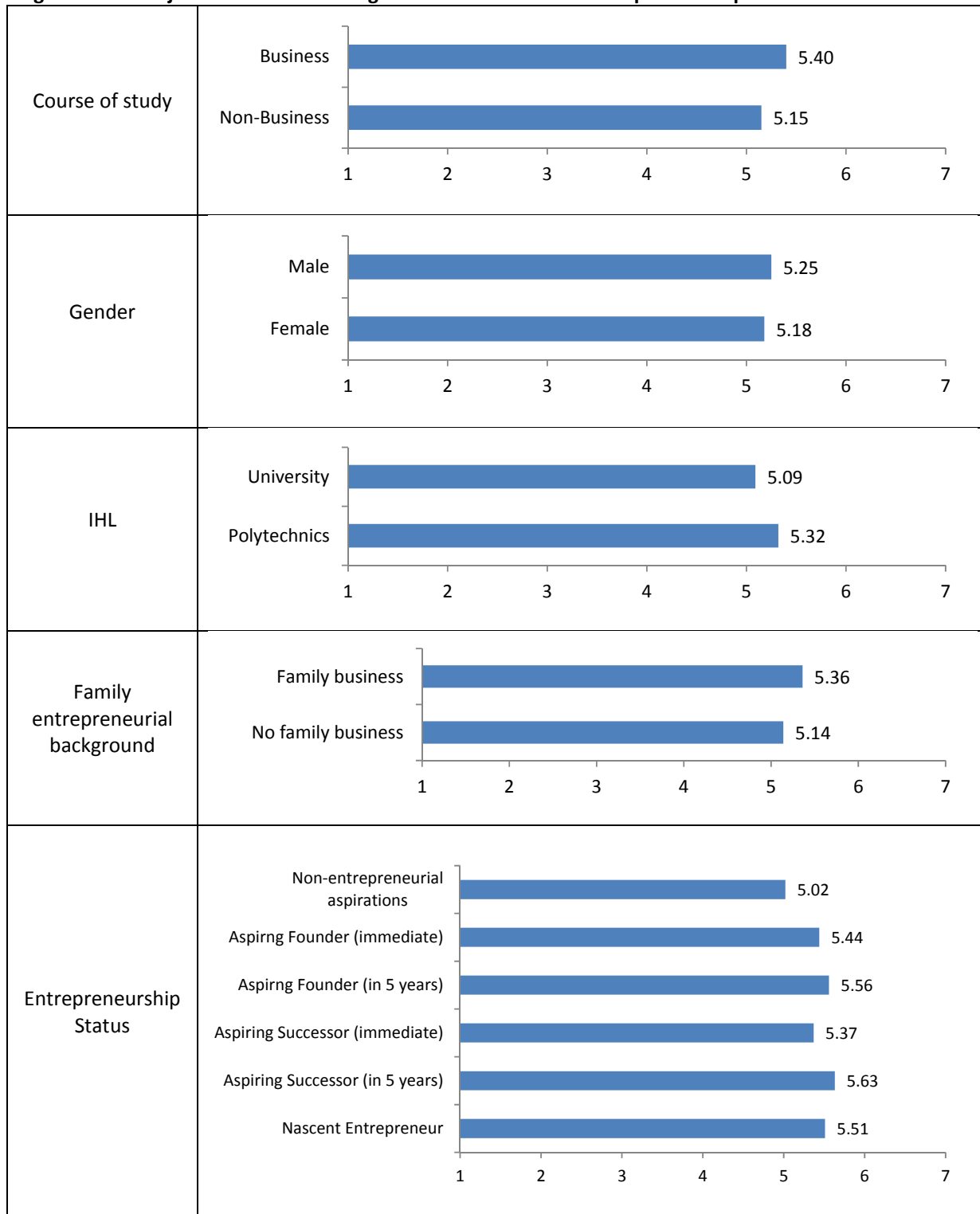
3.4.2 Subjective Norm

The theory of planned behavior suggests that entrepreneurial intention will be shaped by how the students' 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. In view of this, students were asked on the possible reactions of family and friends in response to their choice of a career as an entrepreneur.

Corresponding to the strength of entrepreneurial intentions among the Singapore students, the business students or male students or students with family entrepreneurial background received more positive reaction from the people close to them. On the whole, reactions from family and friends are rather positive for all students across the different entrepreneurship status. **(Figure 3.16)** Comparing across the IHLs, the

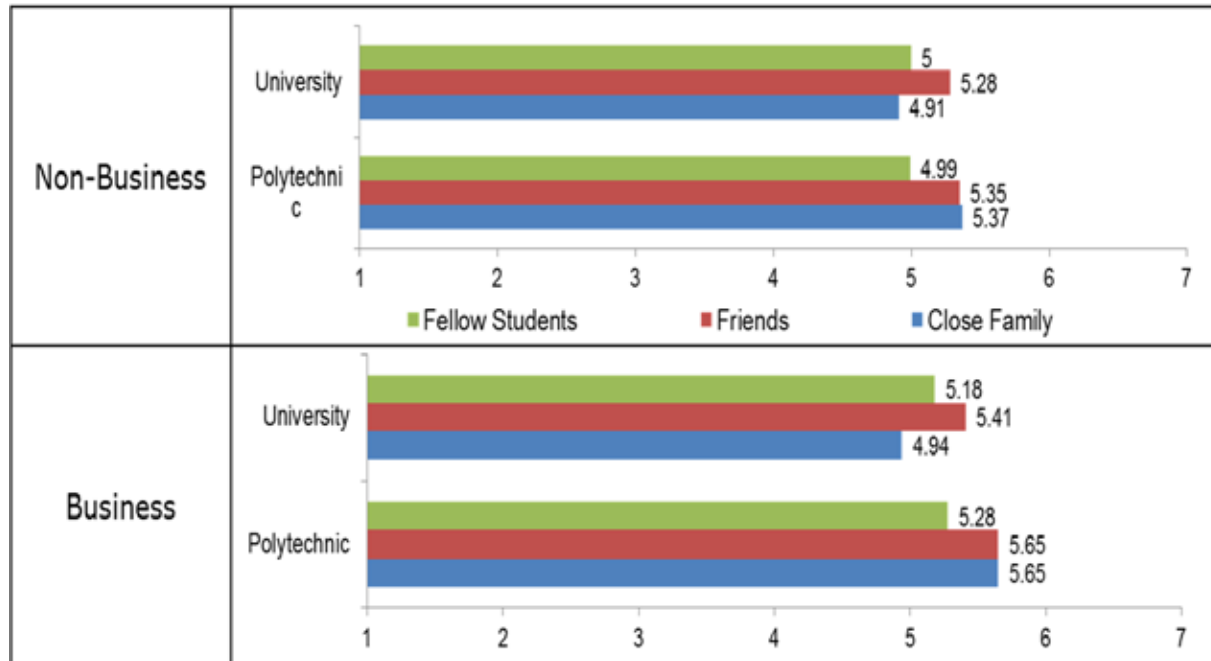
reactions of those close to polytechnic students especially close family and friends; appear to be much more positive compared to university students. (Figure 3.17)

Figure 3.16 Subjective Norm according to Students' Profile & Entrepreneurship Status



Subjective norm on 7-point scale where 1 = very negatively and 7 = very positively

Figure 3.17 Subjective Norm among Singapore Students across IHLs and Field of Study

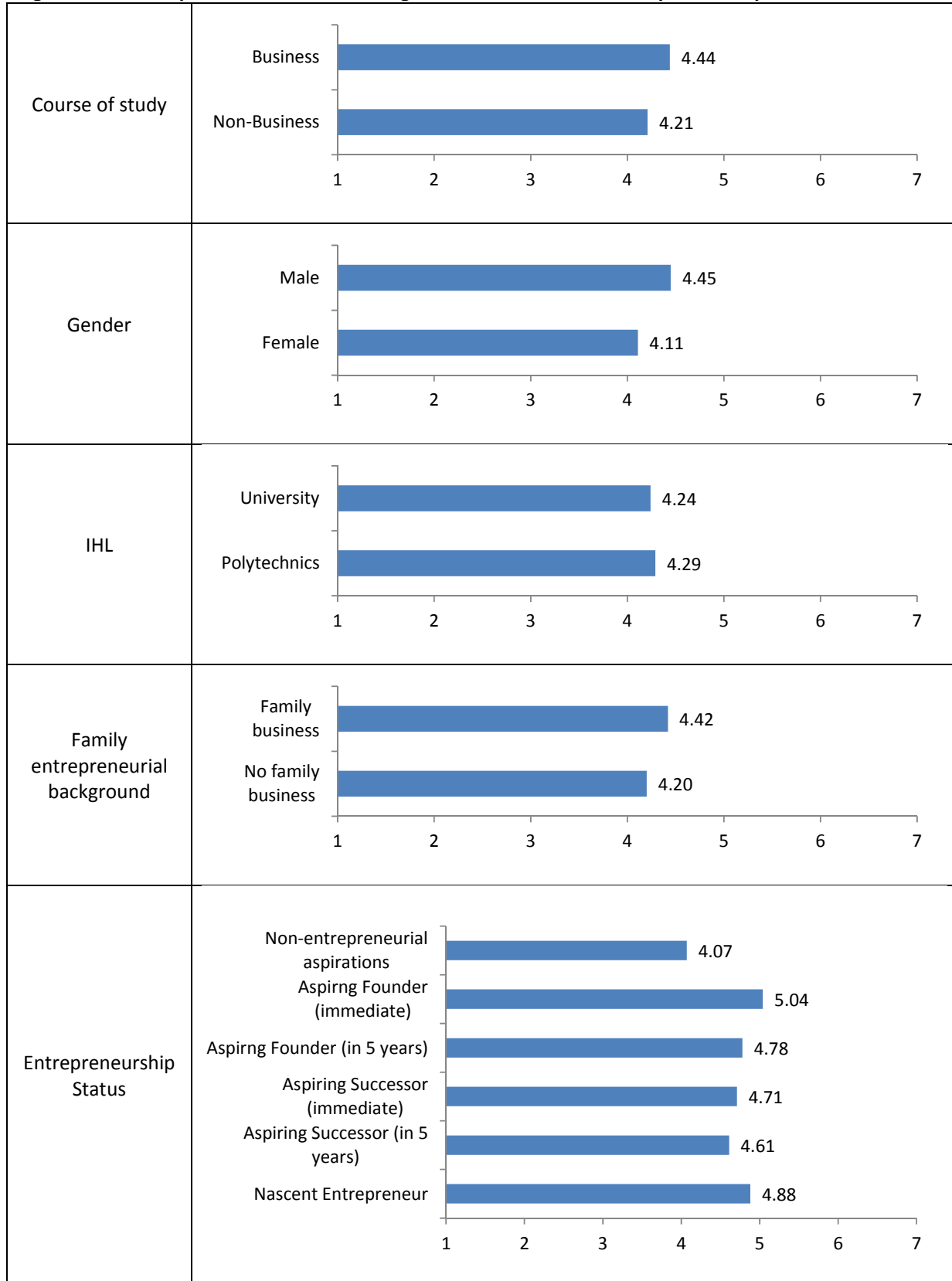


Subjective norm on 7-point scale where 1 = very negatively and 7 = very positively

3.4.3 Perception of Control

In the GUESSS framework, control beliefs are measured by students' perceptions on various internal and external factors that control their careers and lives. Singapore IHL students with stronger entrepreneurial interest show stronger confidence in their own ability to control their own decisions and direction. Among Singapore students, similarly to the strength of entrepreneurial intentions, the business students or male students or students with family entrepreneurial background tend to have stronger confidence in their control over their own interest. Perception of control is also higher among aspiring founders as compared to aspiring successors while students with entrepreneurial intentions in the short term (aspiring founders and aspiring successors immediate) have greater confidence in their control over their own interests compared to those with entrepreneurial intentions in the long term (aspiring founders and aspiring successors 5 years after studies). (Figure 3.18)

Figure 3.18 Perception of Control according to Students' Profile & Entrepreneurship Status



Perception of control rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

3.4.4 Entrepreneurship Self-Efficacy (Perception of Own Competence)

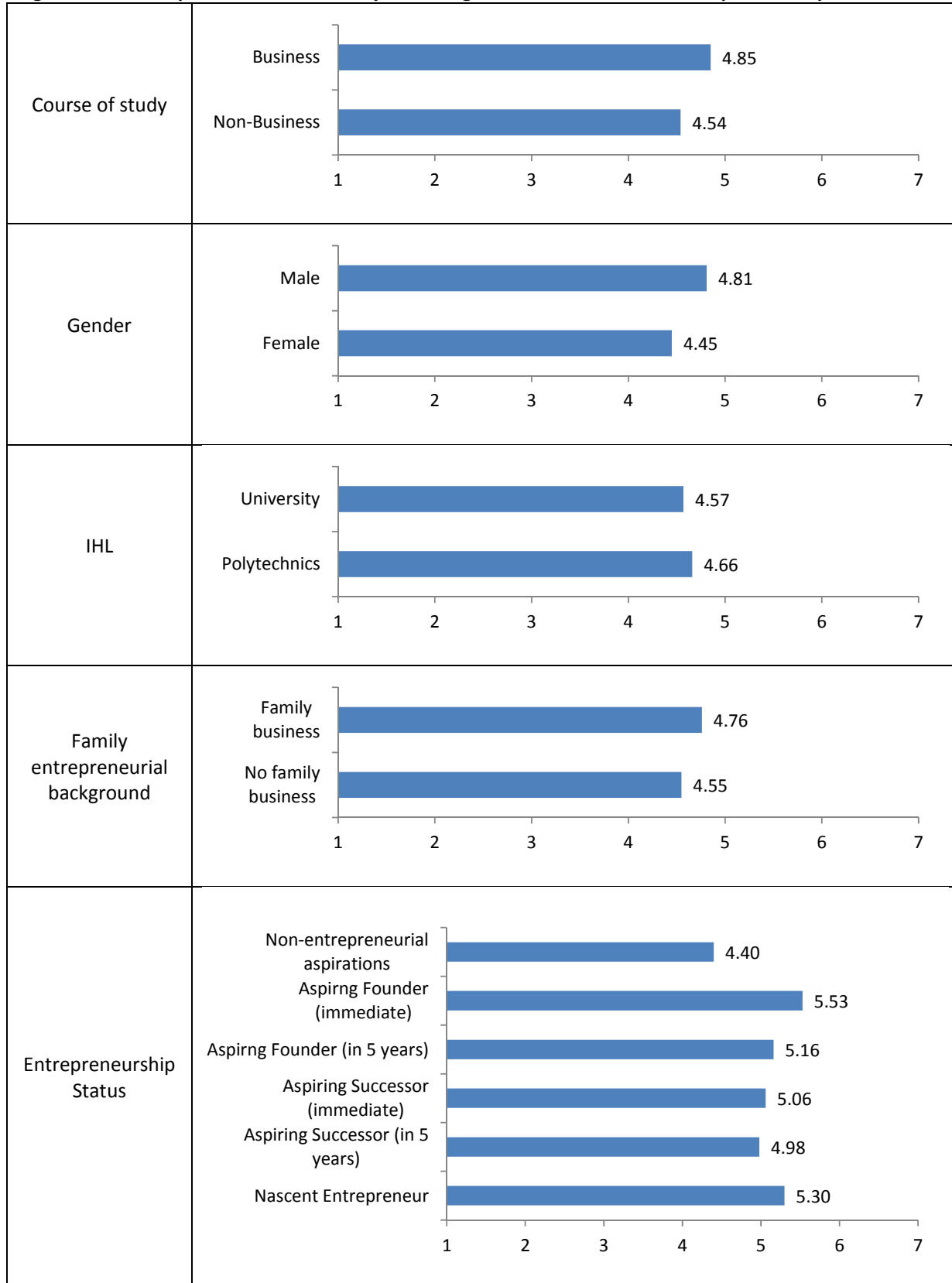
As a measure of entrepreneurial self-efficacy, students were asked to rank their perceived competence in a range of skills pertaining to entrepreneurship. In general, students view themselves as the most competent in being a leader and communicator (4.97 rated on a 7-point scale) and the least competent in areas relating to innovation such as creating new products and services (4.4) and managing innovation within a firm (4.53). (Figure 3.19) In Singapore, the students from business school or from family with parents having their own business or male students rated their competence significantly higher compared to their counterparts (Figure 3.20). Similar to the case for perception of control, entrepreneurial self-efficacy among aspiring founders are ranked higher compared to aspiring successors.

Figure 3.19 Entrepreneurial Self-Efficacy among Singapore IHL Students



Entrepreneurial Self-Efficacy on 7-point scale where 1 = very low competence and 7 = very high competence

Figure 3.20 Entrepreneurial Self-Efficacy according to Students' Profile & Entrepreneurship Status



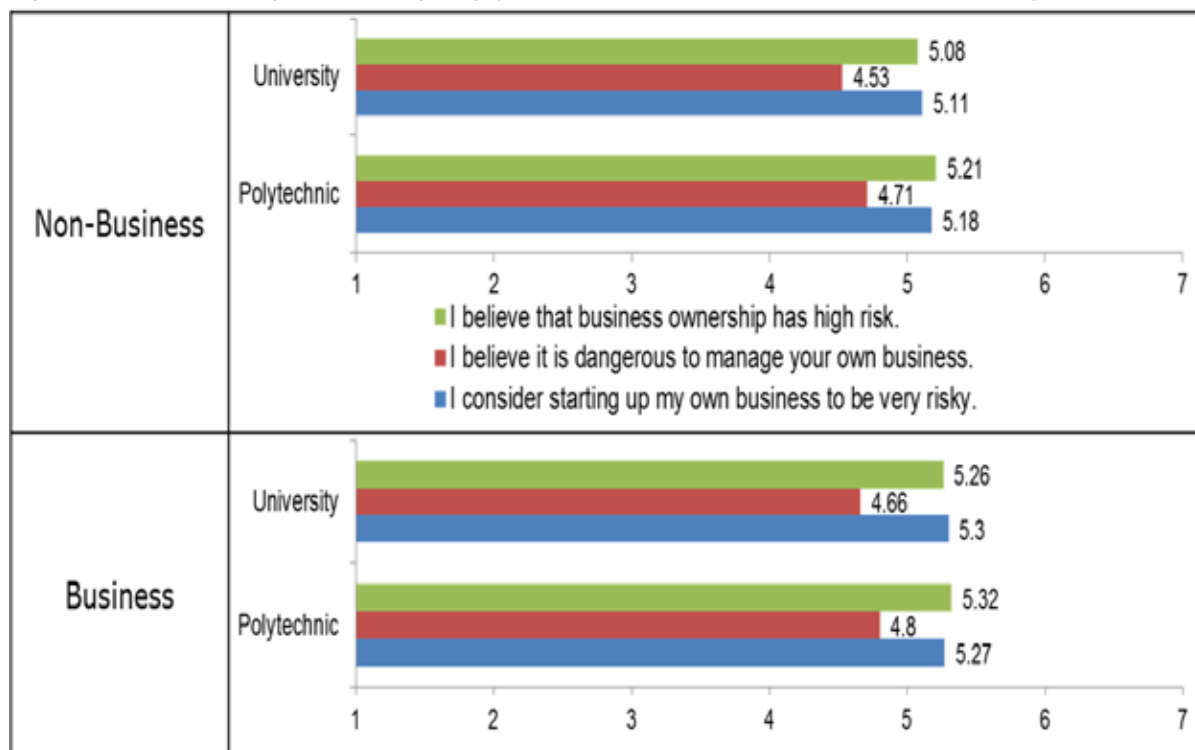
Entrepreneurial Self-Efficacy on 7-point scale where 1 = very low competence and 7 = very high competence

3.4.5 Risk Perception & Attitude towards Risk

In GUESSS 2013/2014, students were asked to assess the perceived risk of creating an own firm and to indicate their willingness to take risks. We are interested to ascertain firstly the extent in which students view entrepreneurship as a risky endeavor as risk is a key aspect of entrepreneurship, and secondly if the willingness to take risks has an impact on the students' career aspirations.

Findings reveal that Singapore IHL students generally perceive business ownership and starting their own business to be more risky than managing their own business. Interestingly, Singapore students from business school reported higher perceived risk of creating their own company compared to their non-business school friends though they have rated higher competence and control over their entrepreneurial interest. Additionally, despite having greater interest in entrepreneurship, polytechnic students are noted to view entrepreneurship as more risky compared to university students. (Figure 3.21)

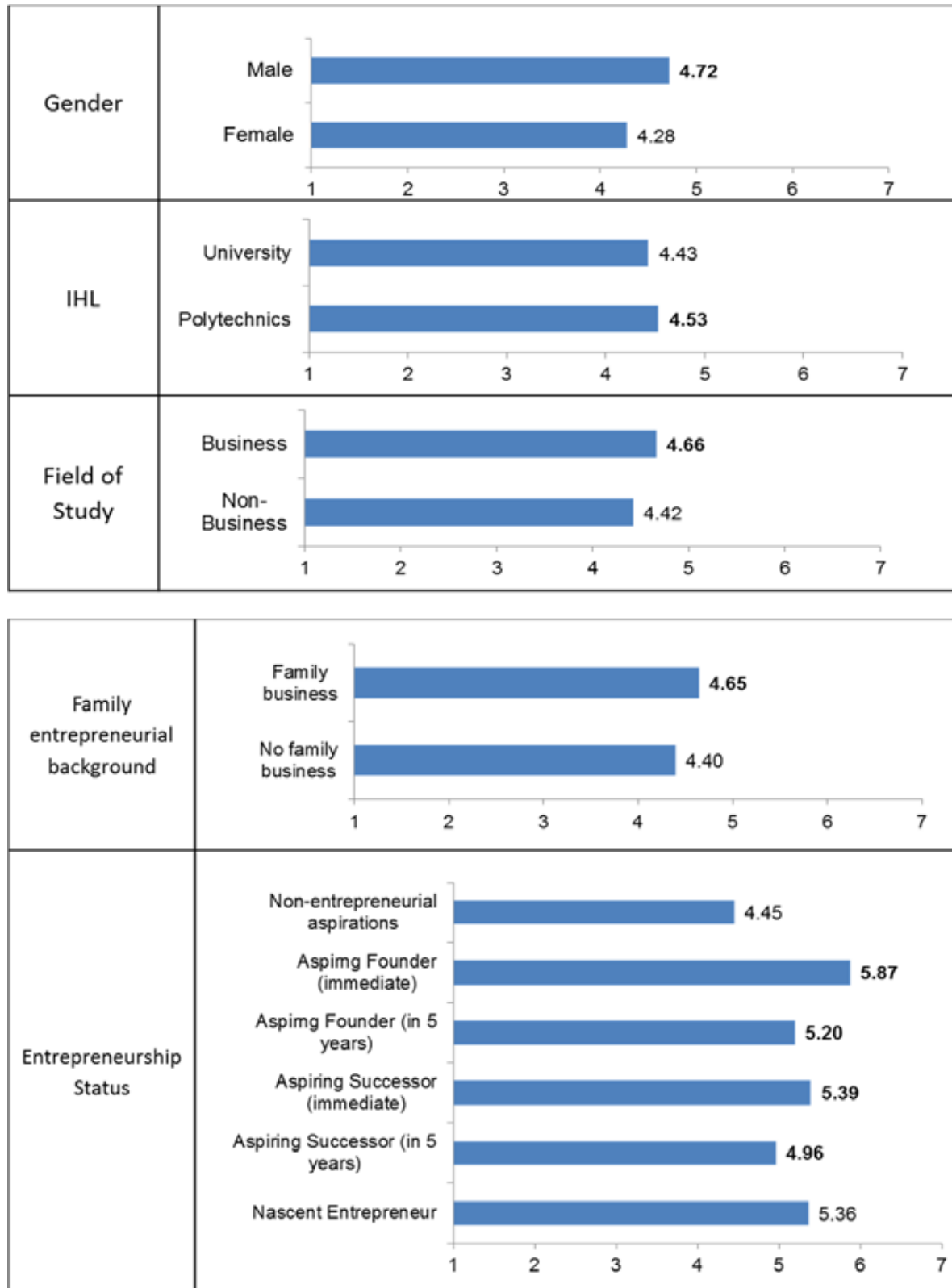
Figure 3.21 Risk Perceptions among Singapore IHL students across IHLs and Field of Study



Risk Perceptions rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

Students' views of the perceived risk of entrepreneurship are not indicative of their willingness to take risks. For example, although polytechnic and business students reported higher perceived risk of creating their own company, they are also much more willing to take risks. (Figure 3.22) Willingness to take risks among students with short and long term entrepreneurial aspirations is significantly higher than students with no entrepreneurial intentions as well. This implies that willingness to take risks does have an impact on students' career aspiration; students who are more risk adverse tend to veer away from a career as an entrepreneur.

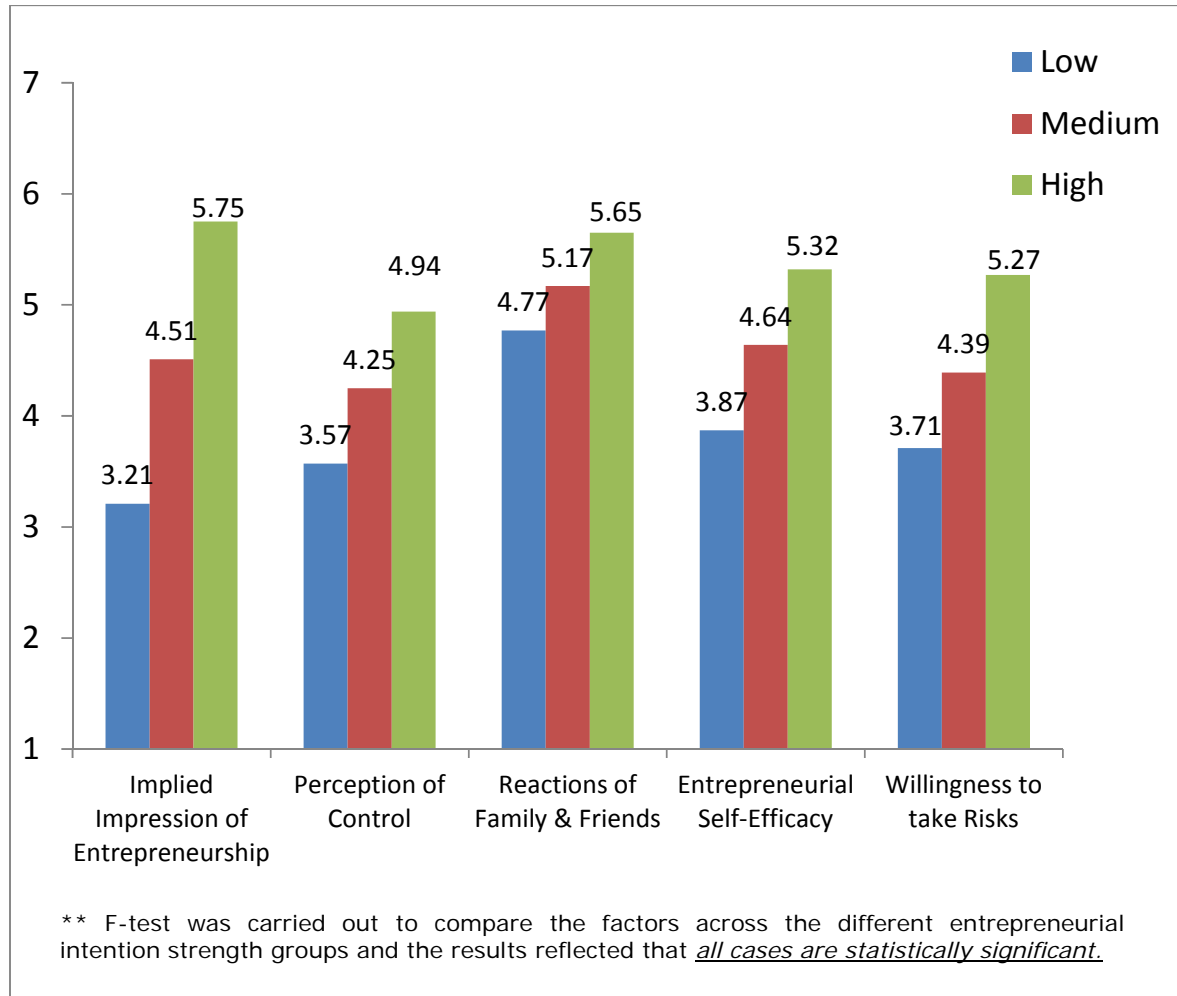
Figure 3.22 Willingness to take Risks according to Students' Profile & Entrepreneurship Status



Risk Preferences rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

3.4.6 Personal Characteristics according to Entrepreneurial Intention Strength

Figure 3.23 Factors according to Entrepreneurial Intention Strength



Factors rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

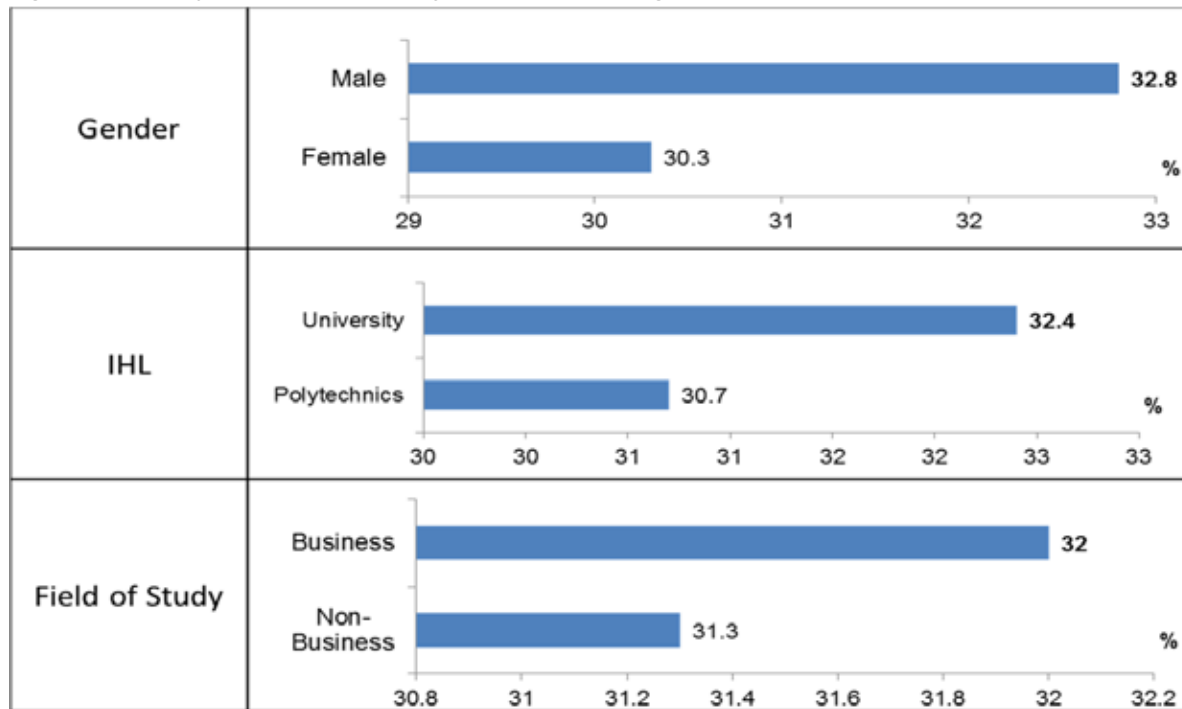
Not surprisingly, students who demonstrated high entrepreneurial intention strength reported the most positive impression of entrepreneurship (5.75), more favourable reactions from family and friends (5.65), the highest level of perception of control (4.94) and entrepreneurial self-efficacy (5.32) and greater willingness to take risks (5.27). Subjective norm is observed to be relatively high across all groups while the values for perception of control are among the lowest. Responses for implied impression of entrepreneurship varied the most across the different entrepreneurial intention strength groups. (**Figure 3.23**)

3.5 Family Background

Academic research has found that family background or rather, the occupational background of parents, plays a significant role in influencing the entrepreneurial intentions of individuals. In particular, greater exposure to prior family business has been found to be significantly and positively related to entrepreneurial intentions as early socialization in a family business results in the formation of values and attitudes towards business ownership. (Light and Bonacich, 1988) In fact, family background and exposure to those in business have been said to influence the development of entrepreneurial-related attitudes. (Morris and Lewis, 1995) In the survey, students were asked to indicate if their parents and other family members are self-employed or are majority shareholders of a private firm to examine if there is any effect on the students' career intentions.

Among the Singapore IHL students, male students, students from university or students from business school, reported higher propensity of coming from family business backgrounds. (Figure 3.24)

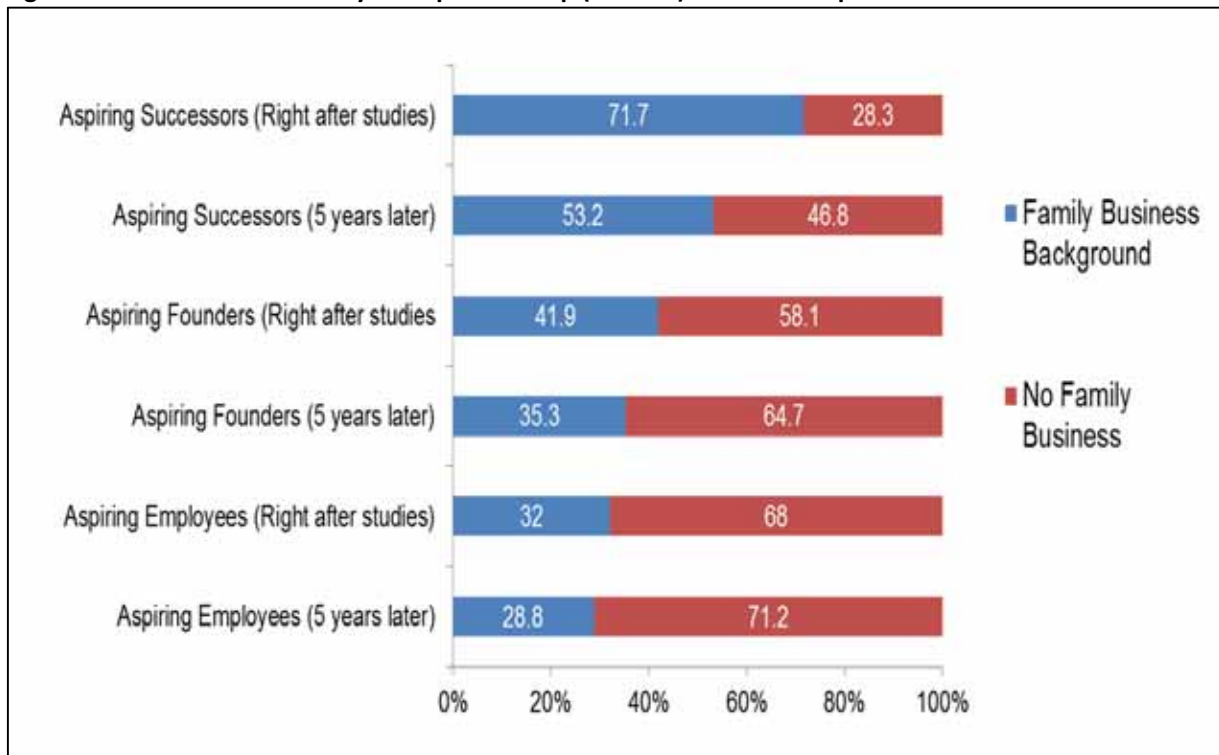
Figure 3.24 Respondents with Family Business according to Students' Profile



Family business background is observed to have some degree of influence on the students' career aspirations. More than two-thirds (71.7%) of aspiring successors right after studies and almost half of aspiring founders (41.9%), come from backgrounds with family businesses. In contrast, the overwhelming majority of aspiring employees do not have any family business background. 68% of aspiring employees right after studies and 71.2% of aspiring employees 5 years after studies comes from backgrounds without family businesses. (Figure 3.25)

Please refer to **Annex G** for the influence of family entrepreneurship (other family members) on Career aspirations.

Figure 3.25 Influence of Family Entrepreneurship (Parents) on Career Aspirations



4 NASCENT ENTREPRENEURS

To understand nascent entrepreneurs in greater detail, the students who have indicated that they are currently trying to start their own business were given an additional set of questions specifically on their entrepreneurial ventures.

4.1 Profile of Nascent Entrepreneurs

16% (n=1036) of the Singapore IHL students are currently trying to start their own business or to become self-employed, slightly higher than global average of 15% (Figure 4.1). The percentage of nascent entrepreneurs among Singapore students is higher than some high income economies such as France (12%), Finland (12%), Japan (11%), Belgium (11%) and Netherland (10%) but lower than Malaysia (52%), Australia (21%) and England (18%).

Among the respondents, students from business school, male students or students with entrepreneurial family background reported higher propensity in trying to start their own business. The rate of nascent entrepreneurship is comparable across both foreign (16.5%) and local (16%) student cohorts. (Figure 4.2)

Figure 4.1 Share of Nascent Entrepreneurs across Countries

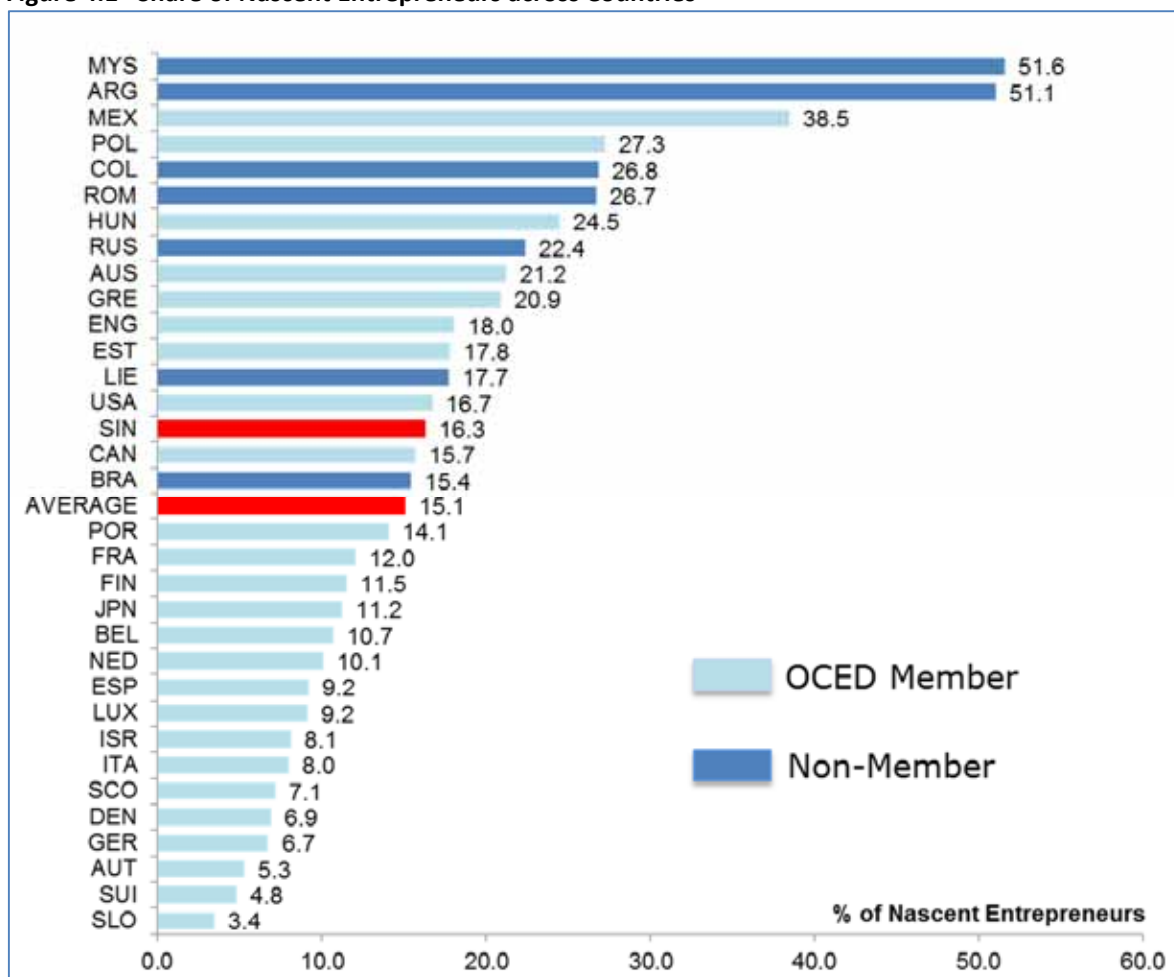
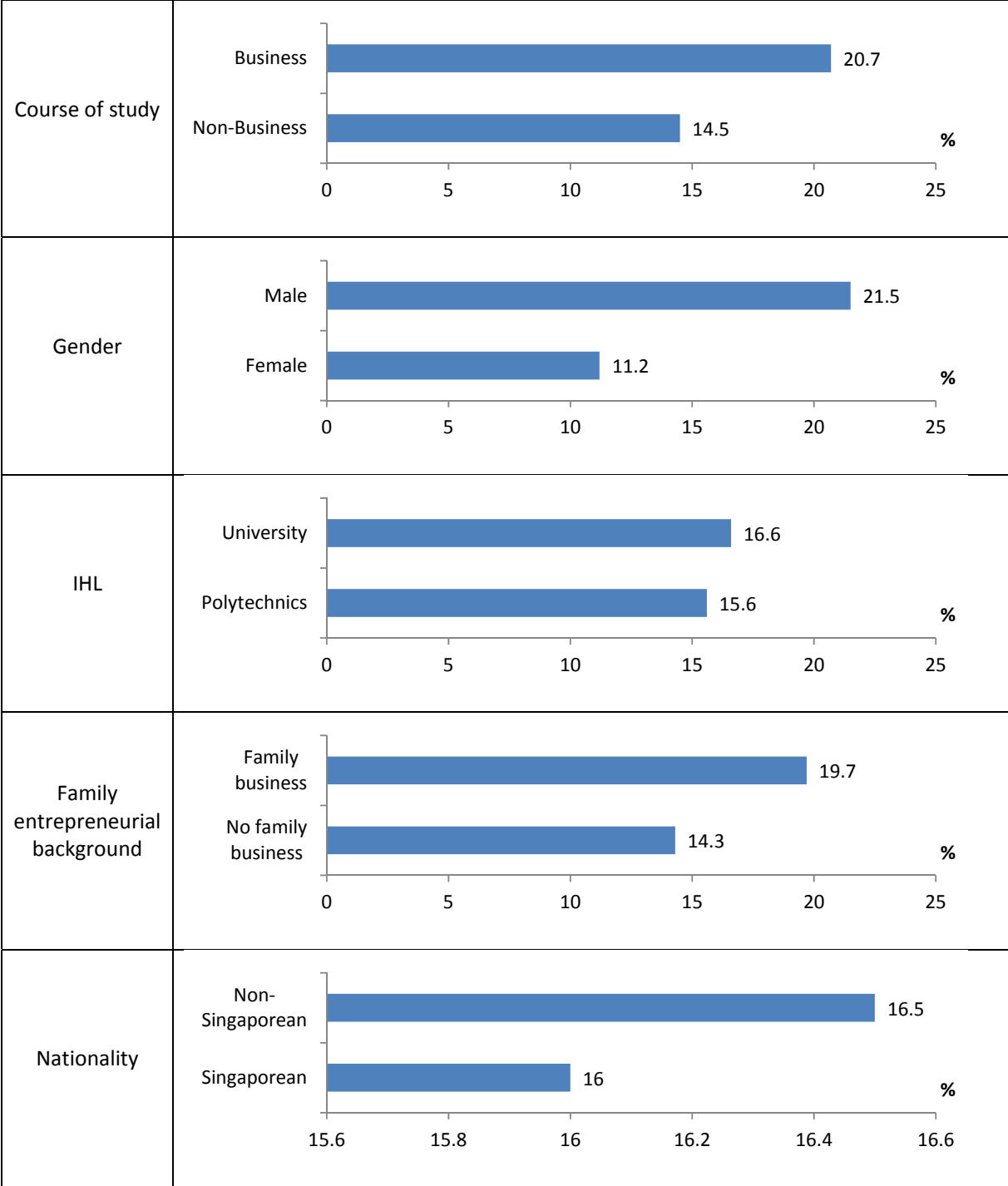


Figure 4.2 Percentage of Nascent Entrepreneurs according to Students' Profiles



4.2 Industry Sector

The majority of the Singapore nascent entrepreneurs intend to venture into trade (23%) and information technology & communication (17%). (Figure 4.3) Industry sectors like arts and entertainment/ event (2%) and construction and manufacturing (3%) which may require more specialized skills, are among the least popular among students trying to start their own business. 19.6% and 19.4% of university students indicated that they intend to start their businesses in the information technology & communication, and wholesale & retail trade sectors respectively, making the two industries the two most popular industry sectors chosen by nascent entrepreneurs from university. (Figure 4.4) On the other hand, a higher proportion of polytechnic students intend to start their businesses in the wholesale & retail sector (25.3%) compared to information technology & communication (12%) and advertising (7.6%).

Figure 4.3 Industry Sectors of Intended Firms among Nascent Entrepreneurs

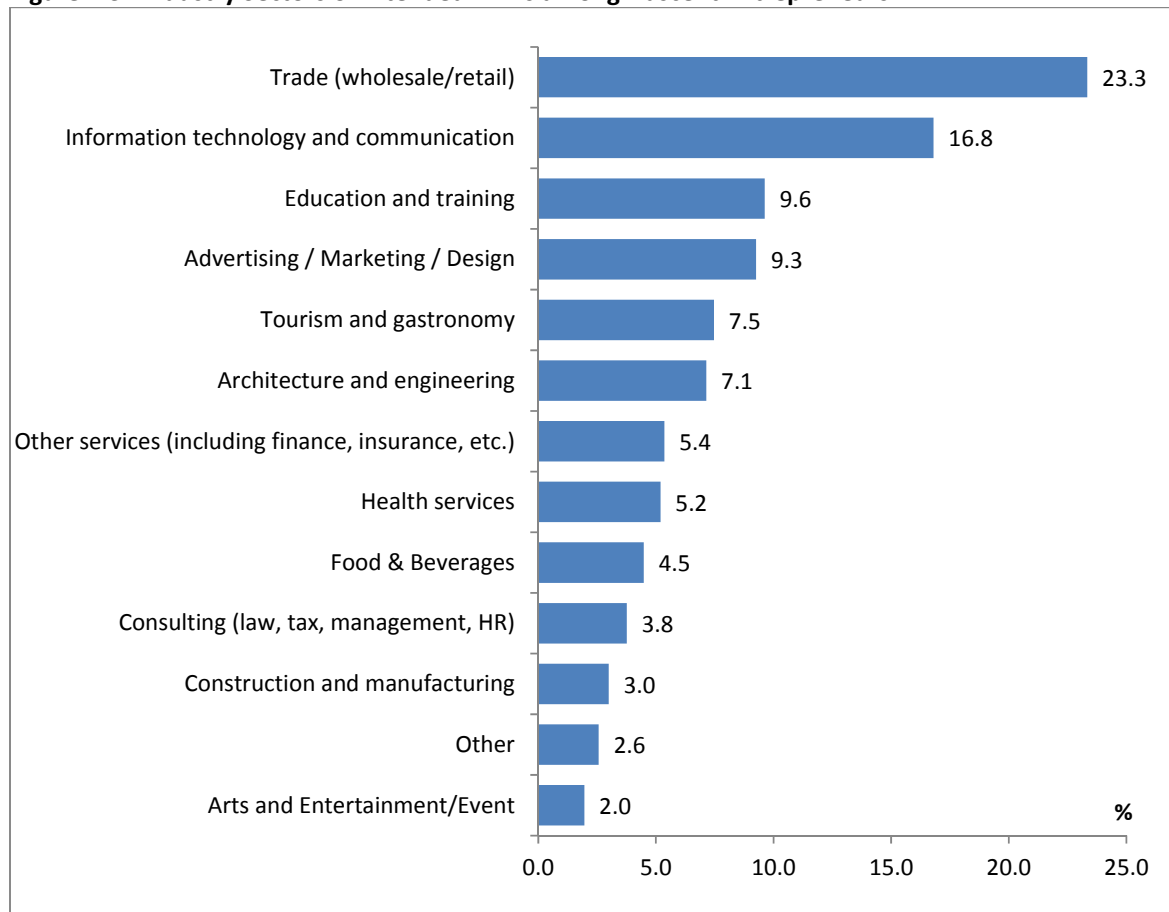
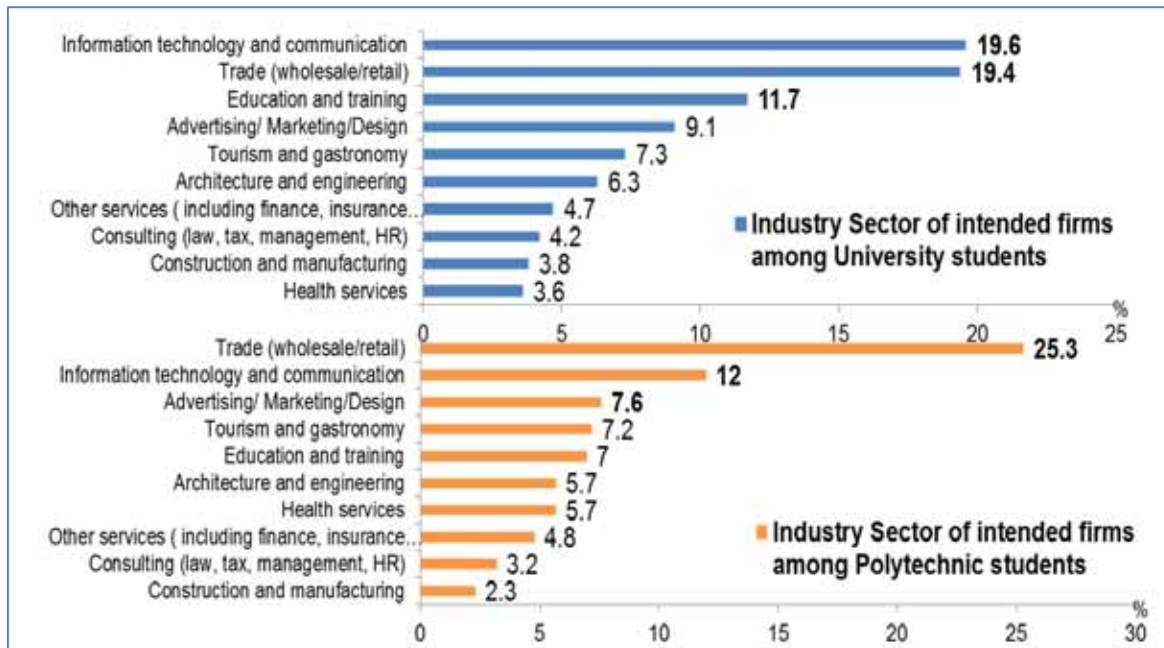


Figure 4.4 Industry Sectors of Intended Firms among Nascent Entrepreneurs according to IHLs



4.3 Characteristics of Planned Firm & Product/Service

In general, Singapore students expect to take an approximate number of 13 more months to start their businesses and they intend to spend an average of 56.7% of their time each week working on their new businesses. With an approximate share of personal equity of 57.8%, this implies that the students prefer to retain the majority of the ownership of their businesses. Estimated amount of money required to start their businesses by nascent entrepreneurs is around 37.1% of initial capital. (Table 4.1) With regards to the planned product or service, almost two-thirds of the students trying to start their businesses (61.7%) indicated that their products are new to all or majority of customers. (Table 4.2) While a higher percentage of nascent entrepreneurs from university have products that are new to majority of customers (46.6% compared to 43.9% in polytechnic), a larger percentage of nascent entrepreneurs from polytechnic have products that are completely new to all customers (18.3% compared to 14.7% from university). On the whole, percentage of polytechnic nascent entrepreneurs with products that is new to all or majority of customers (62.2%) is higher compared university students (61.3%). (Figure 4.5)

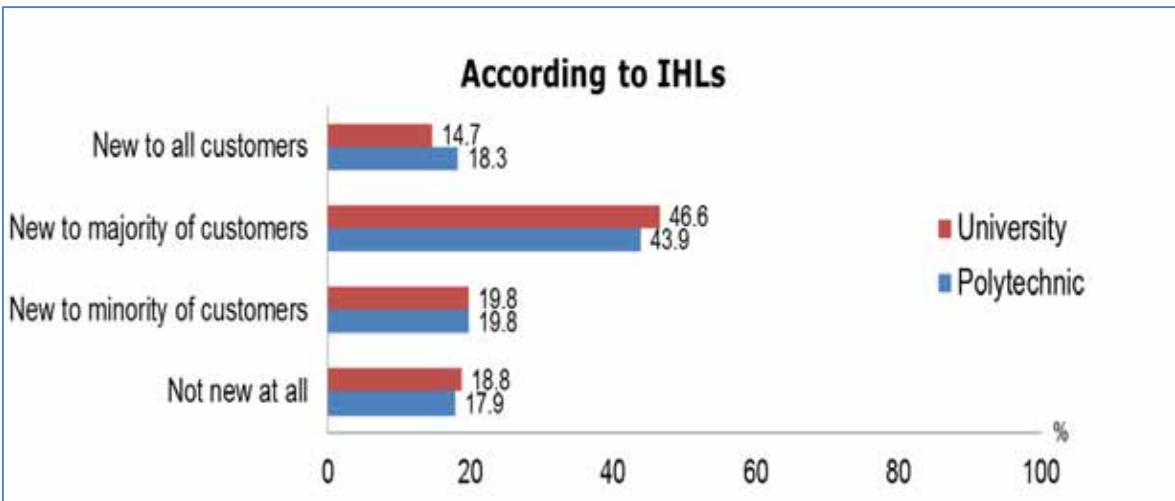
Table 4.1 Characteristics of Planned Firm

	Characteristics of planned firm (computed means)			
	Months to found firm	Average hours planned to spend working per week (%)	Approximate share of personal equity (%)	Money needed to start business
Singapore Nascent Entrepreneurs	12.98	56.7	57.8	37.1% of initial capital

Table 4.2 Characteristics of Planned Product/Service

	New to all customers	New to majority of customers	New to minority of customers	Not new at all
How new is the product/service your company will offer in the market?	16.5%	45.2%	19.9%	18.4%

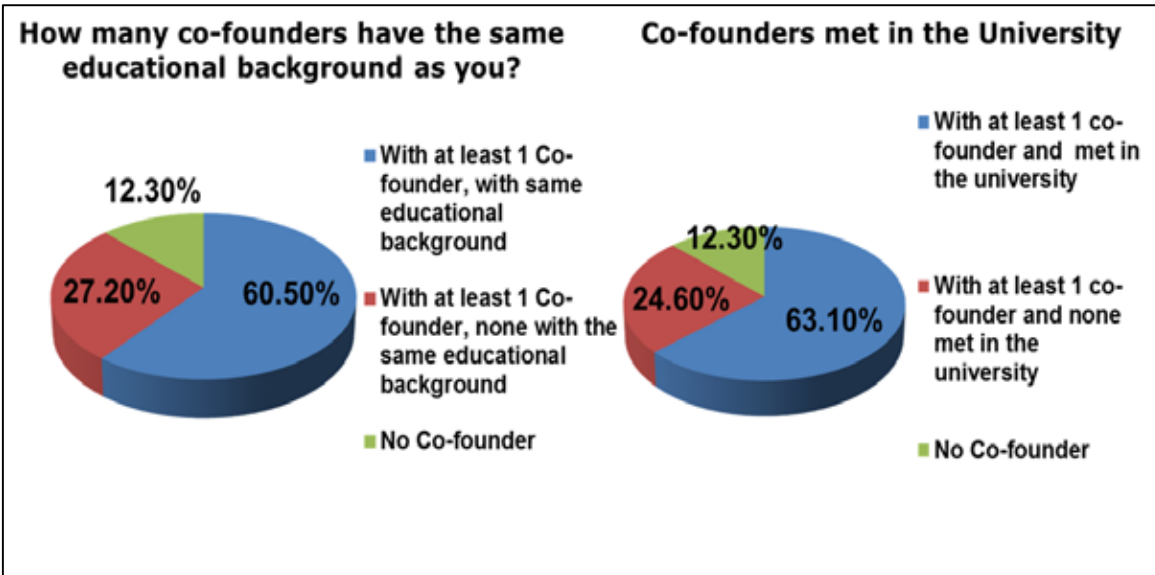
Figure 4.5 Characteristics of Planned Product/Service according to IHLs



4.4 Founding Team

An overwhelming majority, 87.7% of nascent entrepreneurs in Singapore plan to found their firm with at least 1 co-founder. This extremely high percentage reported by Singapore’s nascent entrepreneurs highlights the important role of teamwork in student entrepreneurship. 60.5% of nascent entrepreneurs have co-founders with the same educational background while a significantly large proportion (63.1) met their co-founders in the university. Similarly, this emphasizes the importance of the role of IHLs in fostering entrepreneurship and providing a common ground for like-minded entrepreneurs to meet in society. (Figure 4.6)

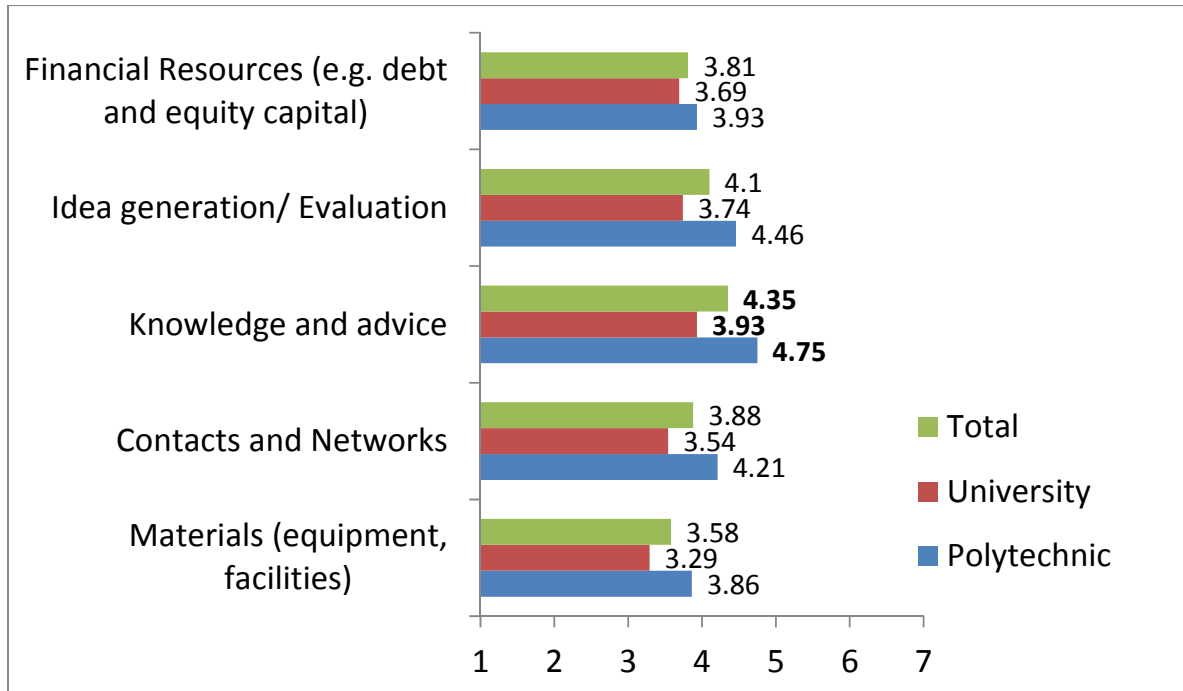
Figure 4.6 Nascent Entrepreneurs, Founding Team



4.5 Founding Resources

On the whole and across the IHLs, nascent entrepreneurs receive the most support from parents in the form of knowledge and advice (4.35) and the least support in materials such as equipment and facilities (3.58). Across the various resources support sources, polytechnic students are more dependent on their parents compared to university students. (Figure 4.7)

Figure 4.7 Parental Support in Founding Resources

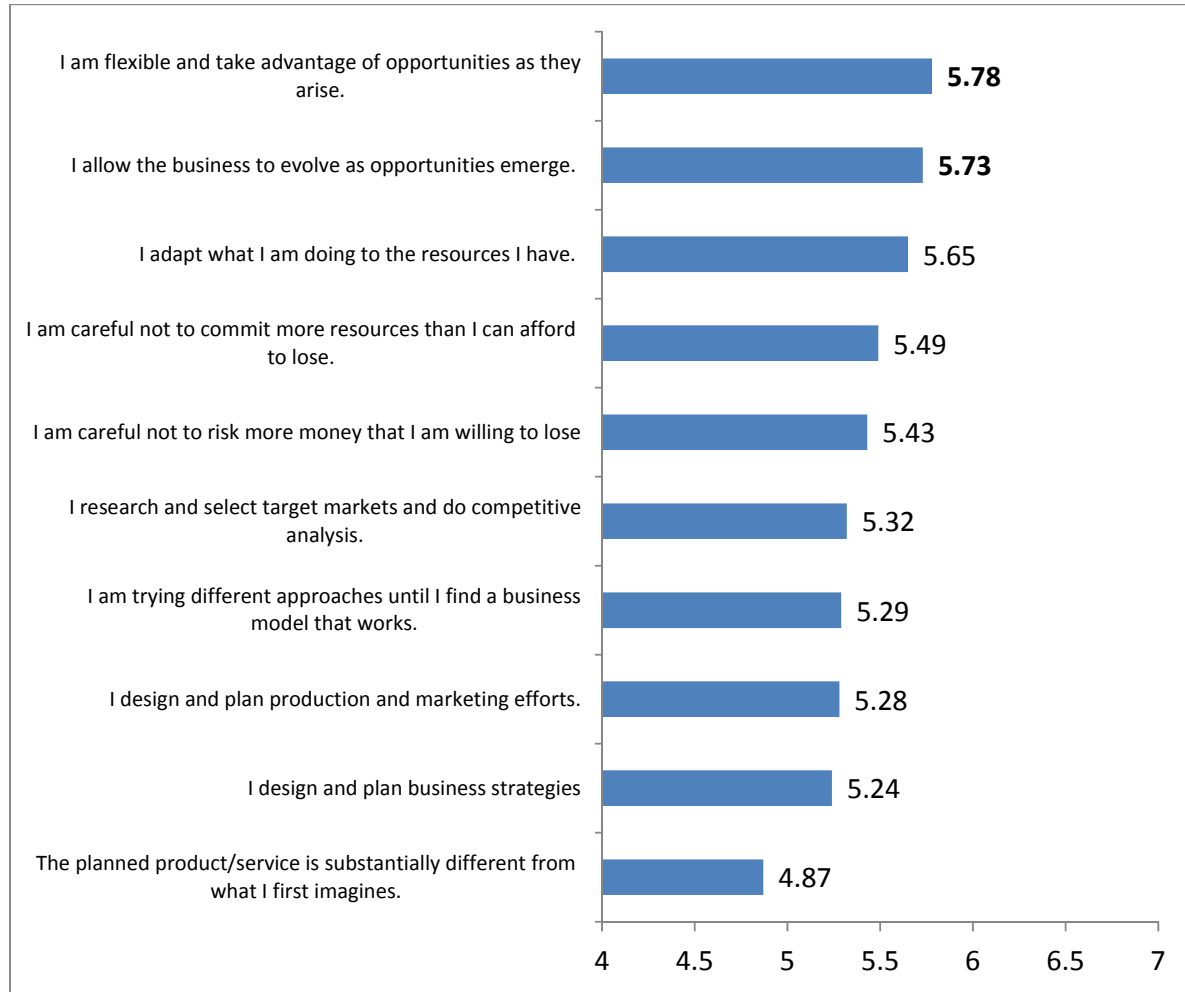


Support rated on a 7 point scale where 1= not at all and 7= very much

4.6 Founding Process

Nascent student entrepreneurs believe that they are flexible and take advantage of opportunities as they arise (5.78) and allow their business to evolve as opportunities emerge (5.73). They also tend to emphasize the use of limited resources in the process of starting a business. (Figure 4.8)

Figure 4.8 Founding Process

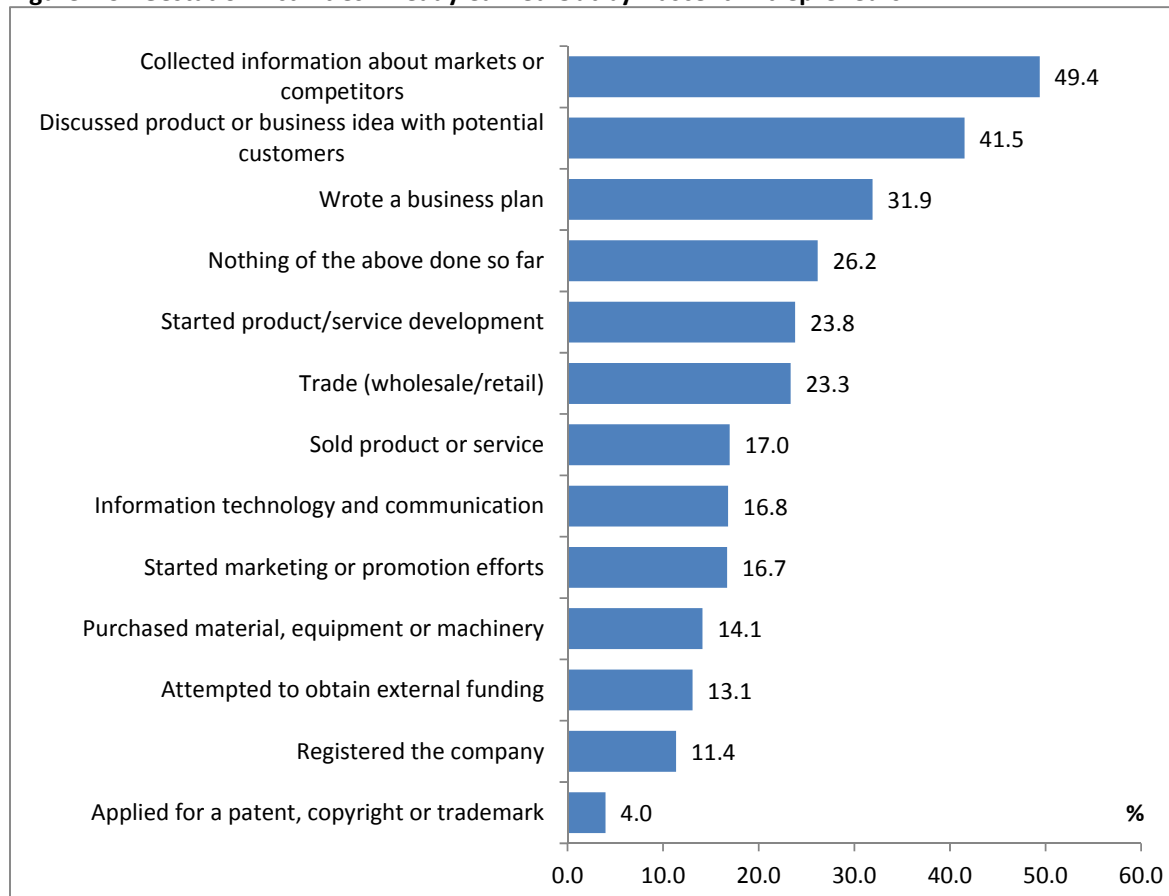


Founding process rated on a 7 point scale where 1= strongly disagree and 7= strongly agree.

4.7 Steps Already Taken

At least one third of the nascent entrepreneurs from Singapore have collected information about markets or competitors, discussed the business ideas with potential customers, and wrote a business plan (**Figure 4.9**). On the other hand, more than one quarter of the students have not started on any preparations plans of those mentioned above. Despite the small percentage, an encouraging number of nascent entrepreneurs have taken more concrete steps in trying to start their business, with 14.1% having purchased material, equipment or machinery, 11.4% having registered the company and 4% having applied for a patent, copyright or trademark.

Figure 4.9 Gestation Activities Already Carried Out by Nascent Entrepreneurs



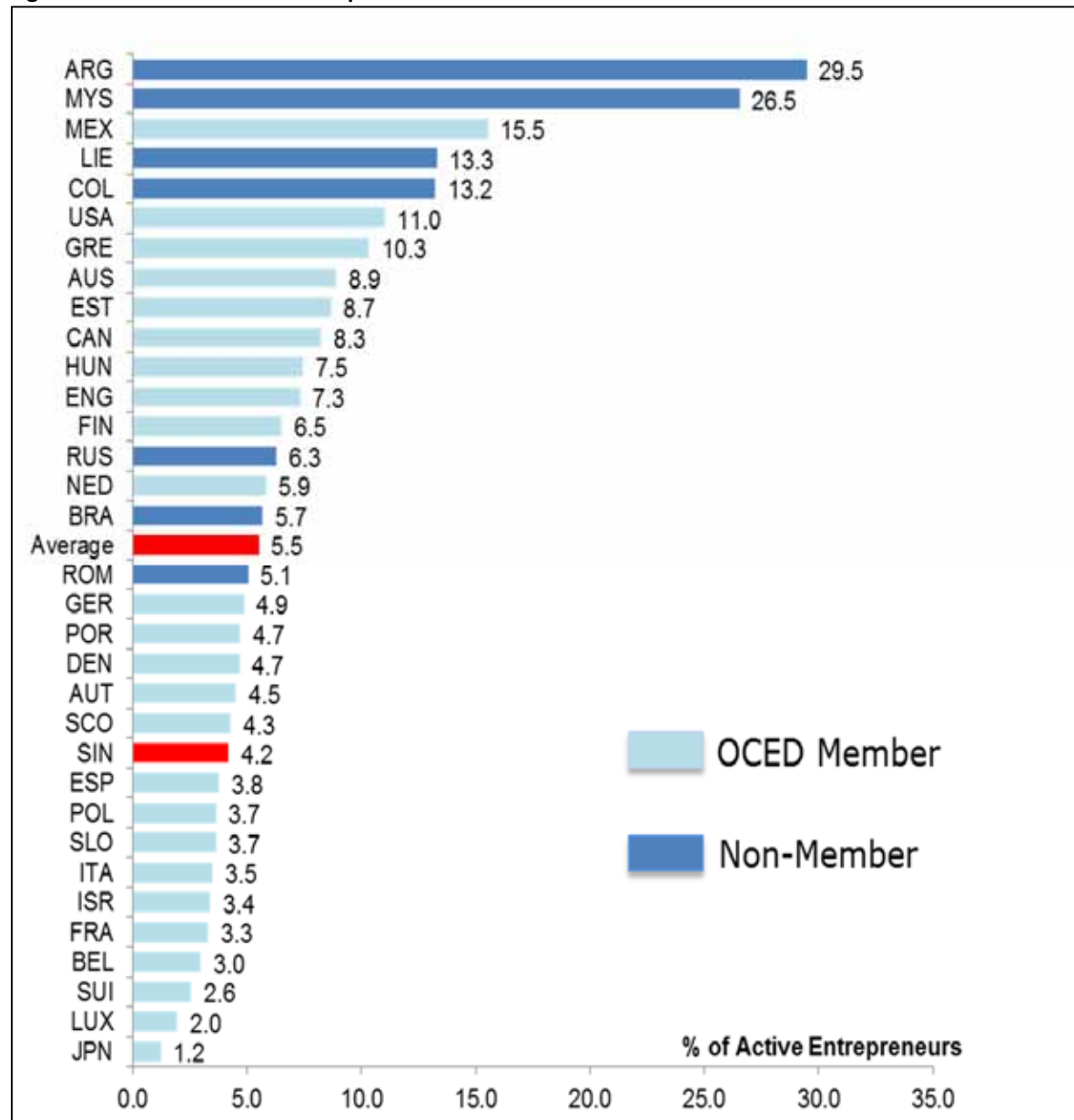
5 ACTIVE ENTREPRENEURS

The students who are running their own business or are self-employed were asked an additional set of questions so as to understand their entrepreneurial experience in greater detail.

5.1 Profile of Active Entrepreneurs

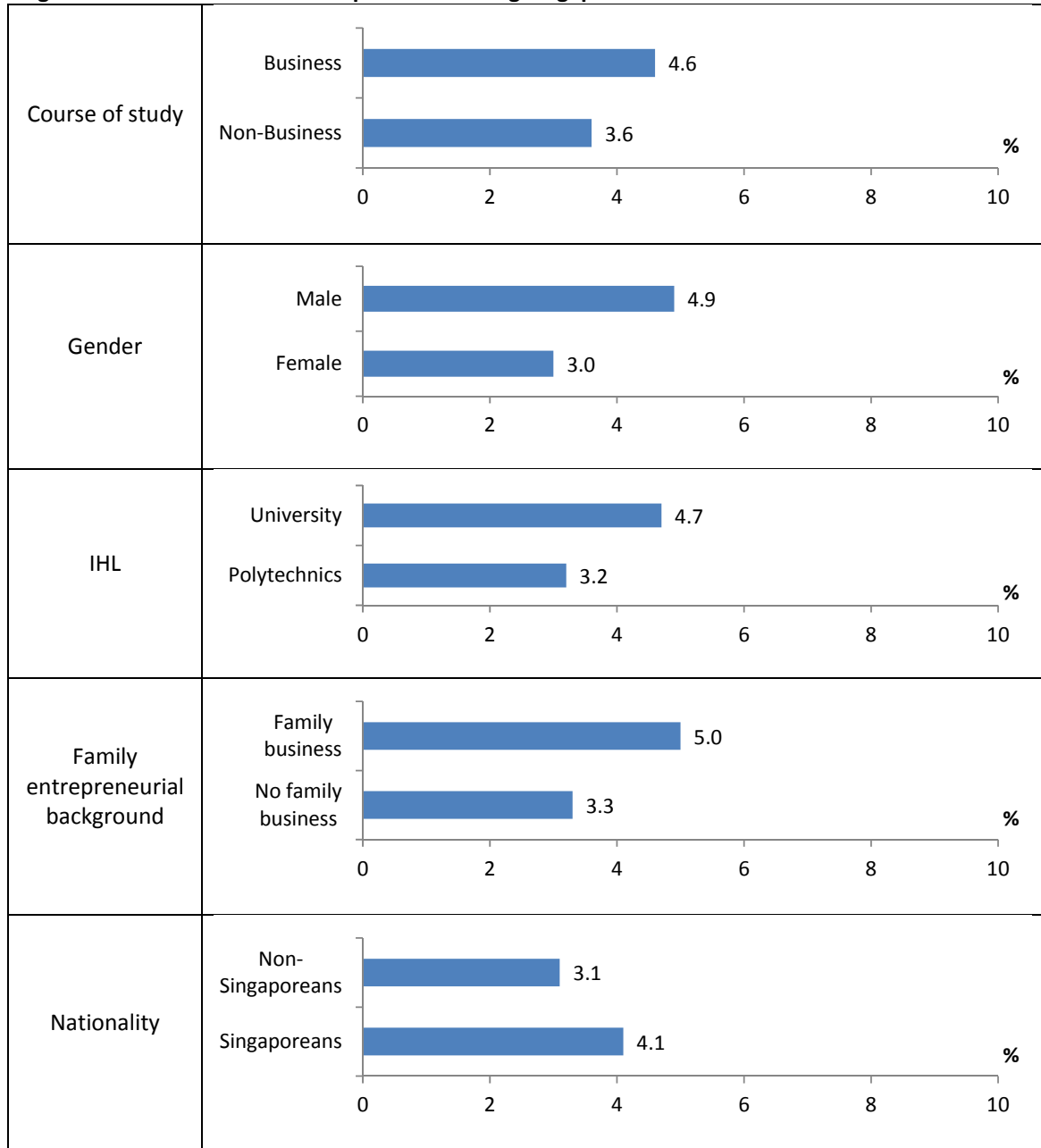
Among the various countries which have participated in the GUESSS 2013/2014, the highest share of active entrepreneurs comes from Argentina (29.5%), followed by Malaysia (26.5%) and Mexico (15.5%). In Singapore's case, the percentage of active entrepreneurs among Singapore IHL students (4%) is lower than the global average of 6% (Figure 5.1).

Figure 5.1 Share of Active Entrepreneurs across Countries



Among the respondents, students from business school, male students, students from university or students from families with own businesses report higher propensity of active entrepreneurs. Rate of active entrepreneurship is found to be higher among local students as well. (4.1% compared to 3.1% for foreign students) (Figure 5.2)

Figure 5.2 Share of Active Entrepreneurs among Singapore IHL Students



5.2 Industry sector

More than one third of the student entrepreneurs are active in wholesale & retail trade, followed by information technology & communication (16.4%) and education & training (13.5%). (Figure 5.3) Examining the industry sector of active students' ventures in greater detail according to IHLs, more than one-quarter of the active entrepreneurs in university are in the wholesale & retail trade sector (28.6%) while the information technology & communication sector has the second largest concentration of students' ventures at 21.1%. Almost half (46.1%) of active entrepreneurs from polytechnics are engaged in wholesale & retail trade, followed by 9.8% in the advertising/ marketing/design industry and 6.9% in the information technology & communication sector. (Figure 5.4)

Figure 5.3 Industry Sectors of Active Students' Ventures

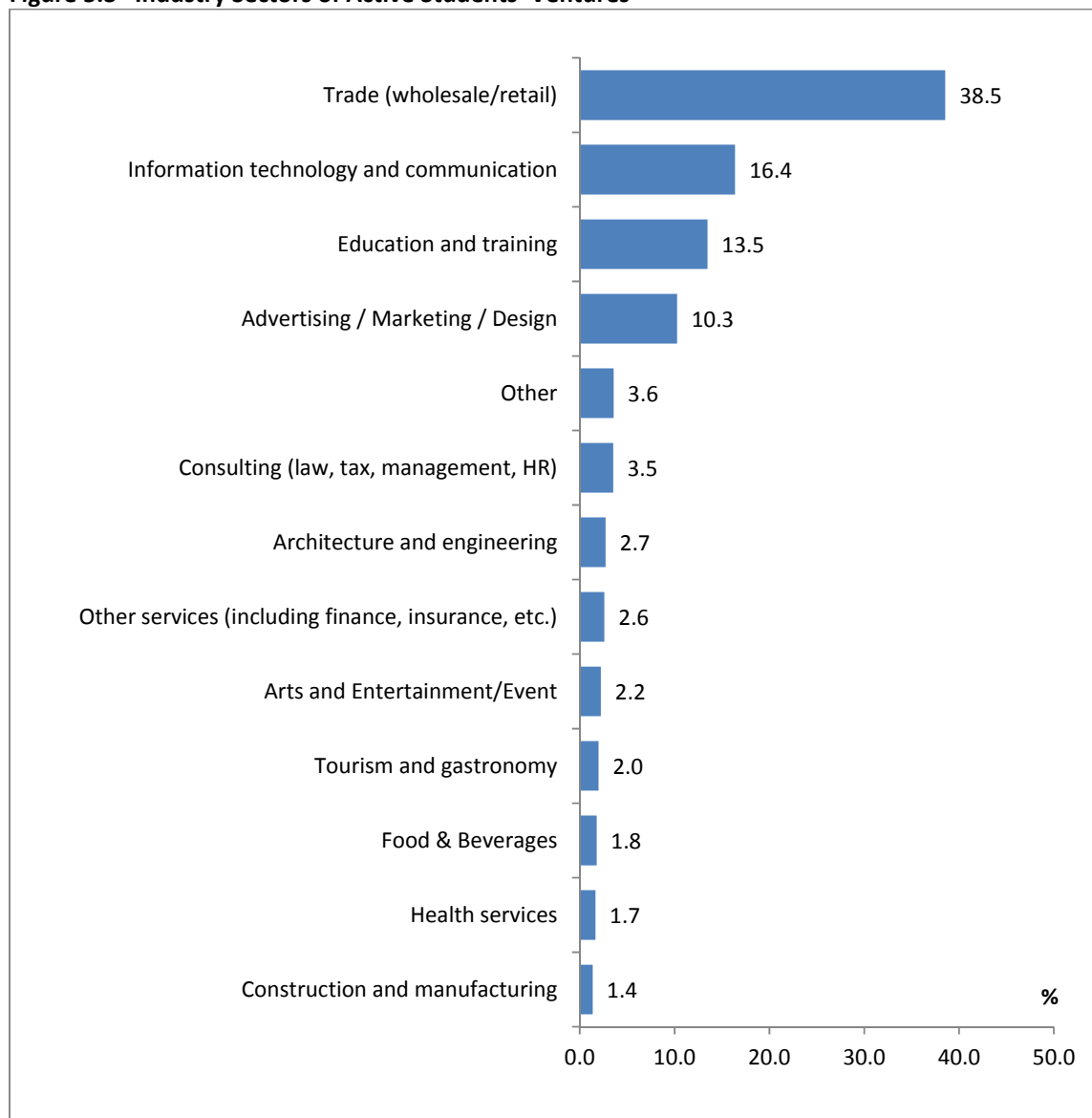
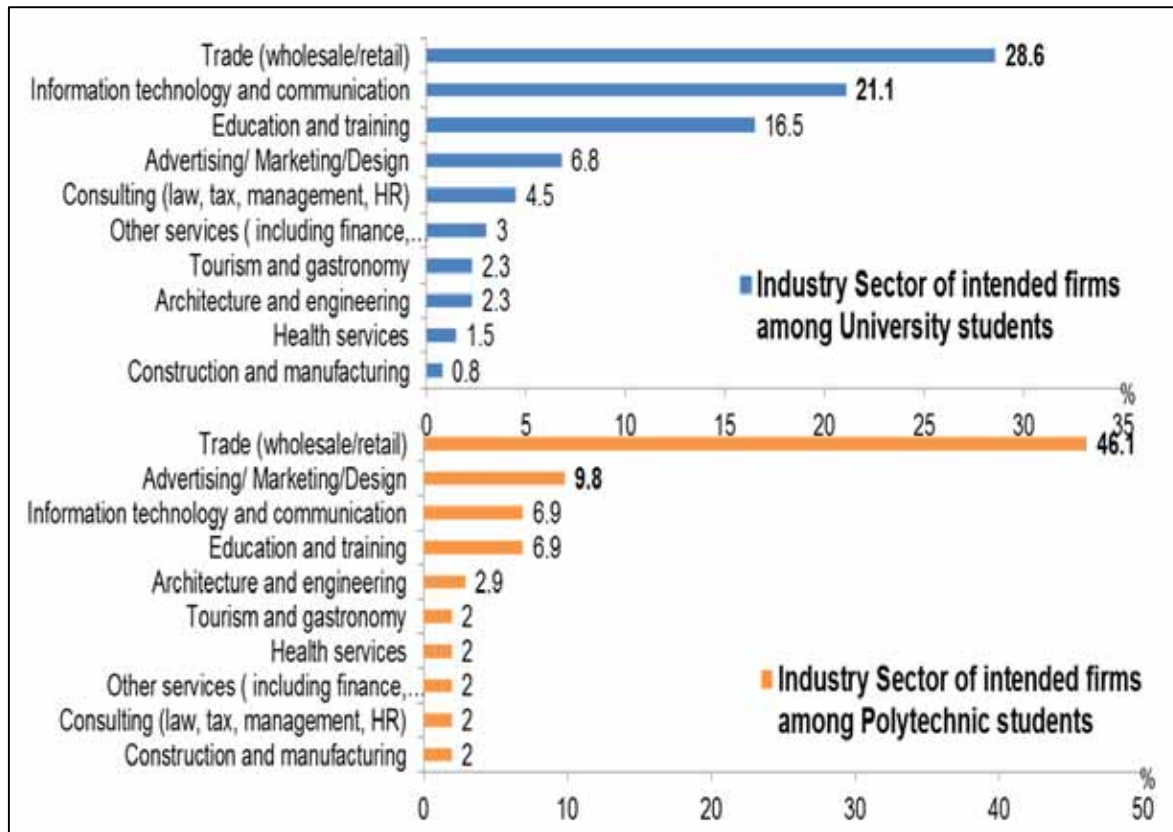


Figure 5.4 Industry Sectors of Active Students' Ventures according to IHLs



5.3 Characteristics of New Firm

In Singapore, the new businesses founded by students' have an average of approximately 3 employees today. Students aim to increase this level of employment to an average of 59 employees in 5 years' time, implying a business growth factor of 22.12. (Table 5.1) This figure is much higher than the reported growth factor of 11.76 in GUESSS 2011 report, which was already higher than the global average of 4.23 then. While the significantly higher expected growth reported by active entrepreneurs reflects confidence in their entrepreneurial self-efficacy and greater optimism in the market conditions compared to 2011, the high expectations may not always translate into actual performance as many external factors influence the growth of early-stage ventures. On average, active entrepreneurs in Singapore spend 27 hours a week working, with an approximate personal share of equity of 59% in their businesses.

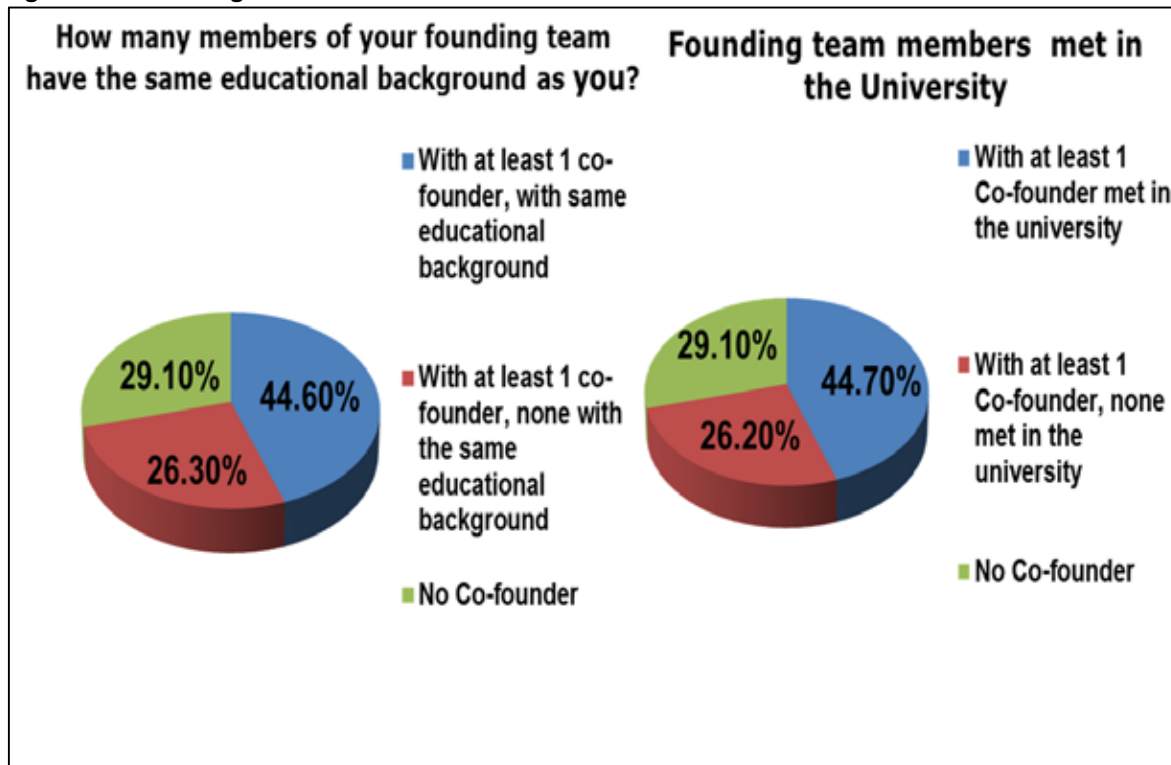
Table 5.1 Characteristics of New Firm

	Characteristics of Students' New Ventures (computed means)				
	No. of Employees today	No. of Employees planned in 5 years	Business Growth Factor	Hours worked per week	Share of personal equity (%)
Singapore Active Entrepreneurs	2.67	59.01	22.12	27.33	59

5.4 Founding Team

70.9% of active entrepreneurs founded their new ventures with at least 1 other partner. Almost half of the active entrepreneurs (44.6%) in Singapore have at least 1 member of the founding team with the same educational background while 44.7% met at least 1 of their co-founders in the university. (Figure 5.5)

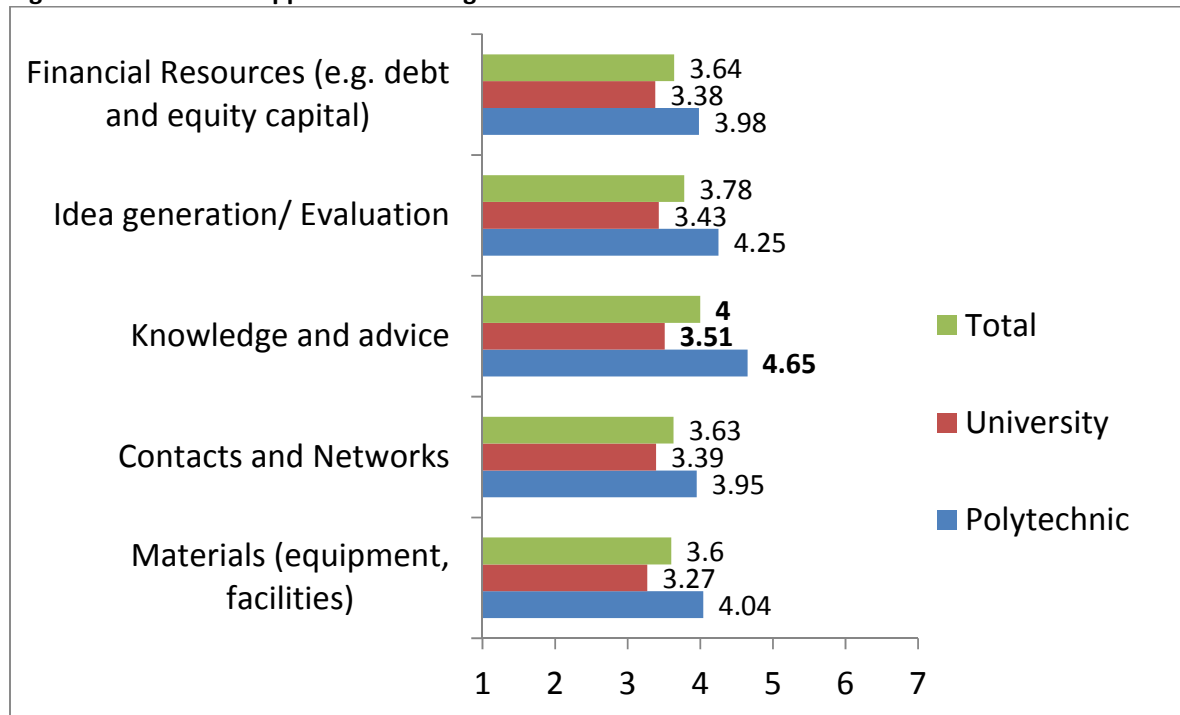
Figure 5.5 Founding Team



5.5 Founding Resources

On the whole and across the IHLs, students receive the most support from parents in the form of knowledge and advice. While university students are least dependent on their parents for support in the form of materials like equipment and facilities, polytechnic students are least dependent on their parents for contacts and networks. Similar to nascent entrepreneurs, active entrepreneurs from polytechnic are more dependent on their parents across the various resources support source compared to those from university. (Figure 5.6)

Figure 5.6 Parental Support in Founding Resources

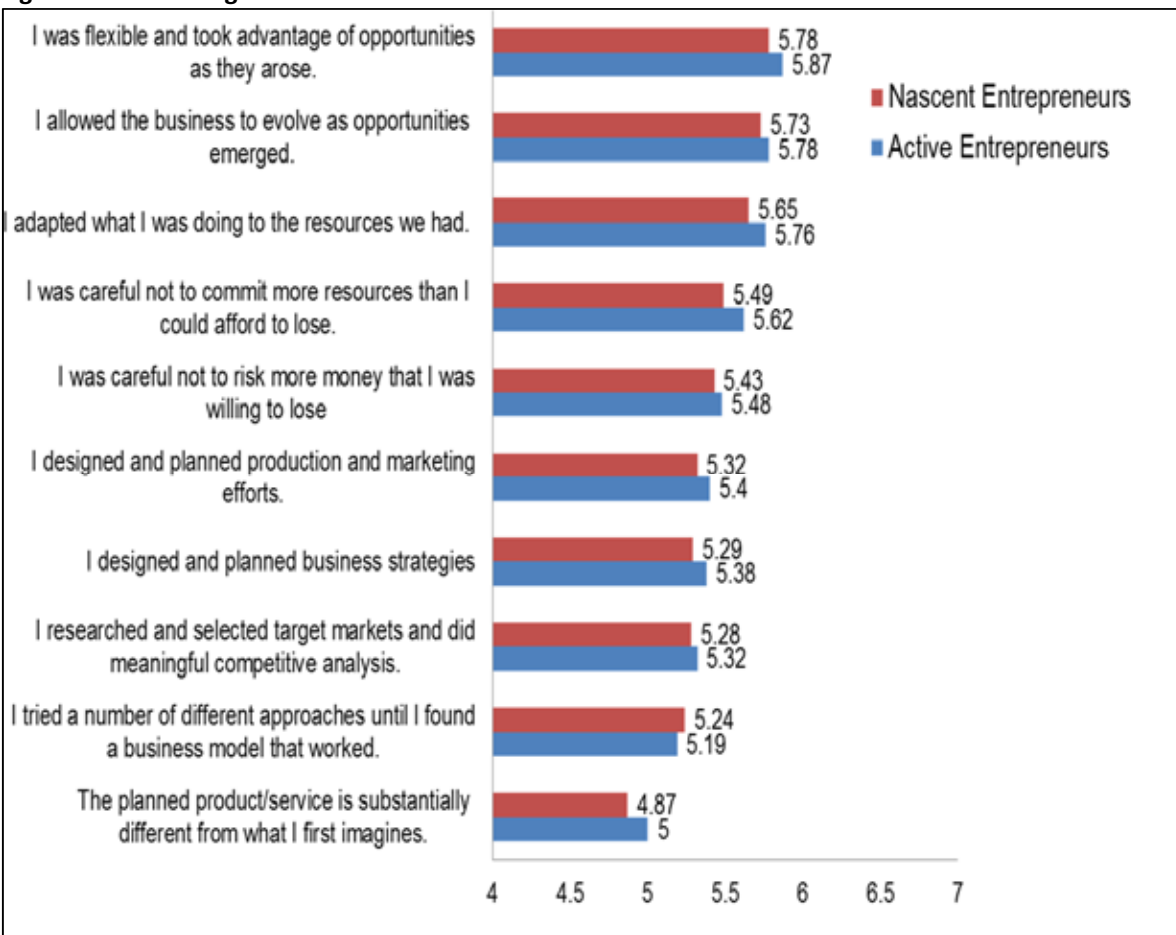


Support rated on a 7 point scale where 1= not at all and 7= very much

5.6 Founding Process

Similar to nascent entrepreneurs, active entrepreneurs agreed that being flexible and taking advantage of opportunities as they arose were important during the process of starting their businesses. However, in contrast to the nascent entrepreneurs, active entrepreneurs place greater emphasis on designing and planning production and marketing efforts (5.4 compared to 5.32 for nascent entrepreneurs 5.32) and designing and planning business strategies (5.38 compared to 5.29 for nascent entrepreneurs). Active entrepreneurs are also relatively more adaptive and flexible to allow the business to evolve (5.78 compared to 5.73 of nascent entrepreneurs), adapt according to the resources available (5.76 compared to 5.65) and not to commit more resources than they can afford to (5.62 compared to 5.49). (Figure 5.7)

Figure 5.7 Founding Process

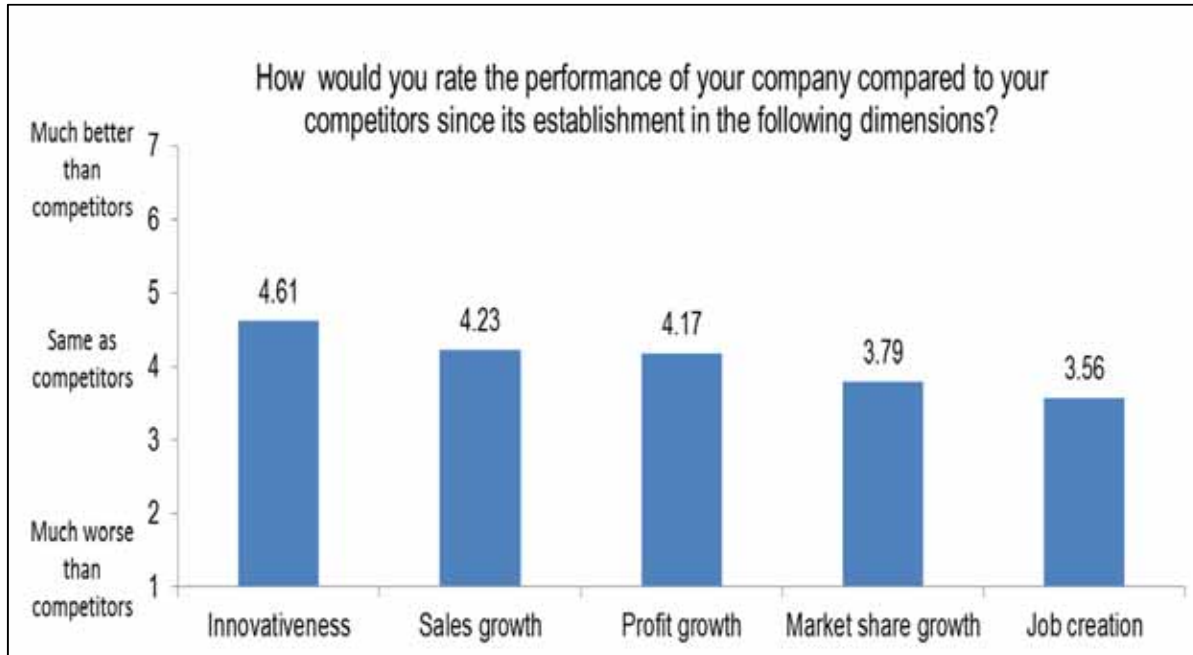


Founding process rated on a 7 point scale where 1= strongly disagree and 7= strongly agree

5.7 Company Performance

The businesses founded by the active entrepreneurs in Singapore have performed as well as their competitors in terms of sales (4.23 on a 7 point scale), profit (4.17) and market share growth (3.79). Performance in innovativeness among students' ventures is ranked the highest at 4.61, implying that the firms have performed slightly better than their competitors in terms of innovation. In contrast, performance in job creation (3.56) is less promising as compared to their competitors in the industry. (Figure 5.8)

Figure 5.8 Performance of Company



Performance rated on a 7 point scale where 1= much worse, 4= equal and 7= much better

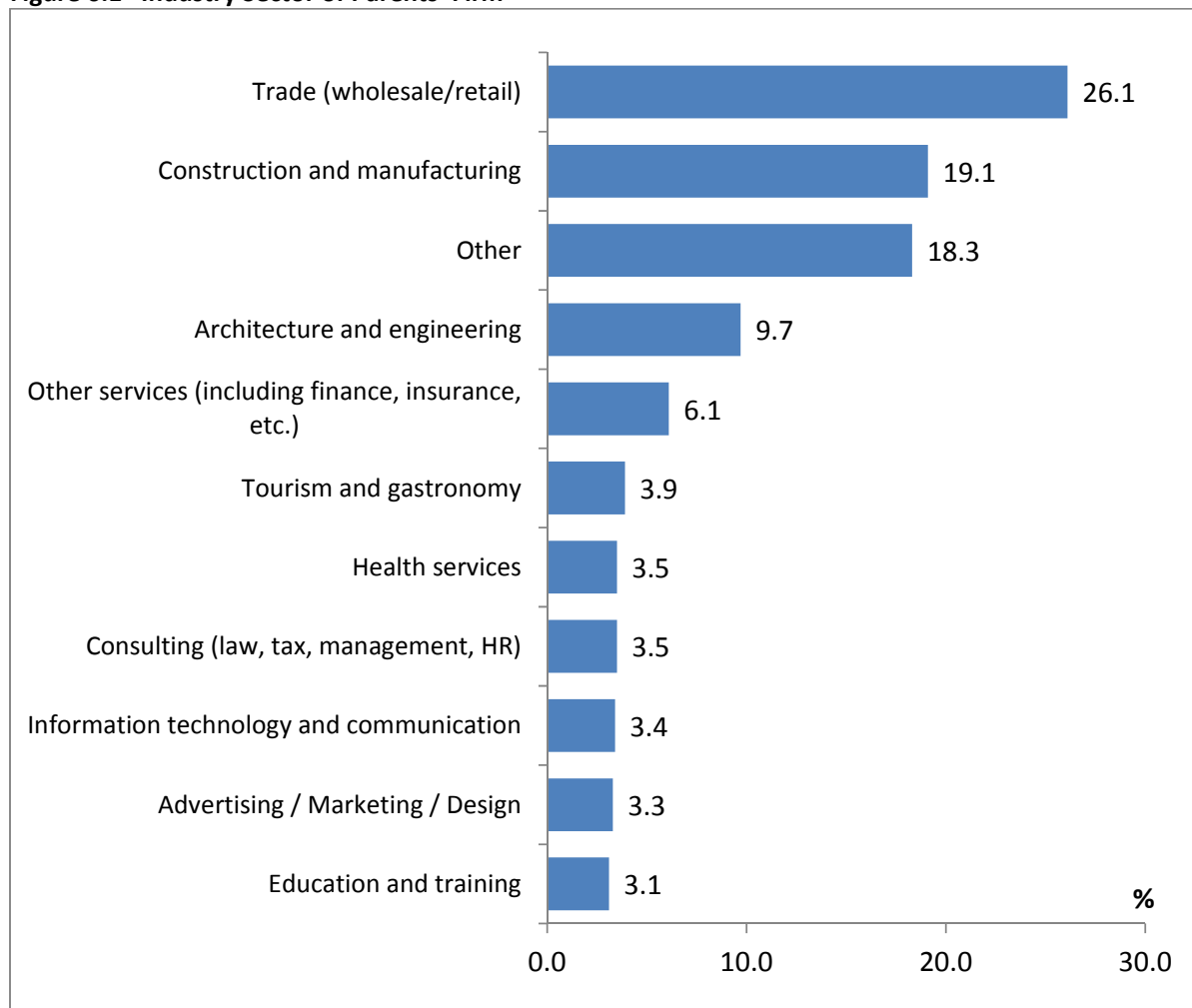
6 FAMILY BUSINESSES (SUCCESSORS)

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. 33.9% of the surveyed students come from a background of family-run businesses. The group of successors (n=2191) was asked an extra set of questions on their family business and succession intentions.

6.1 Industry sector

Similar to the trend observed among nascent and active entrepreneurs in Singapore, more than a quarter of the family businesses are active in wholesale & retail trade (26.1%). A noticeable difference compared to nascent and active entrepreneurs is the high concentration of family firms in the construction and manufacturing sector while the education & training, and information technology & communication sectors are less popular among family businesses. Approximately one-fifth of the family businesses are active in the construction and manufacturing sector (19.1%), making it the second largest industry sector for family firms. (Figure 6.1)

Figure 6.1 Industry Sector of Parents' Firm



6.2 Characteristics of Parents' Firm

Respondents were asked about the characteristics of their parents' firm to get a better understanding of their family businesses. With an approximate number of 35 employees, the computed average number of firms owned by parents is 1 and parents had owned the firm for an average of 14 years. The average share of equity held in the hands of their family is 69% while respondents indicated that their personal share of equity in the business was approximately 18%. (Table 6.1)

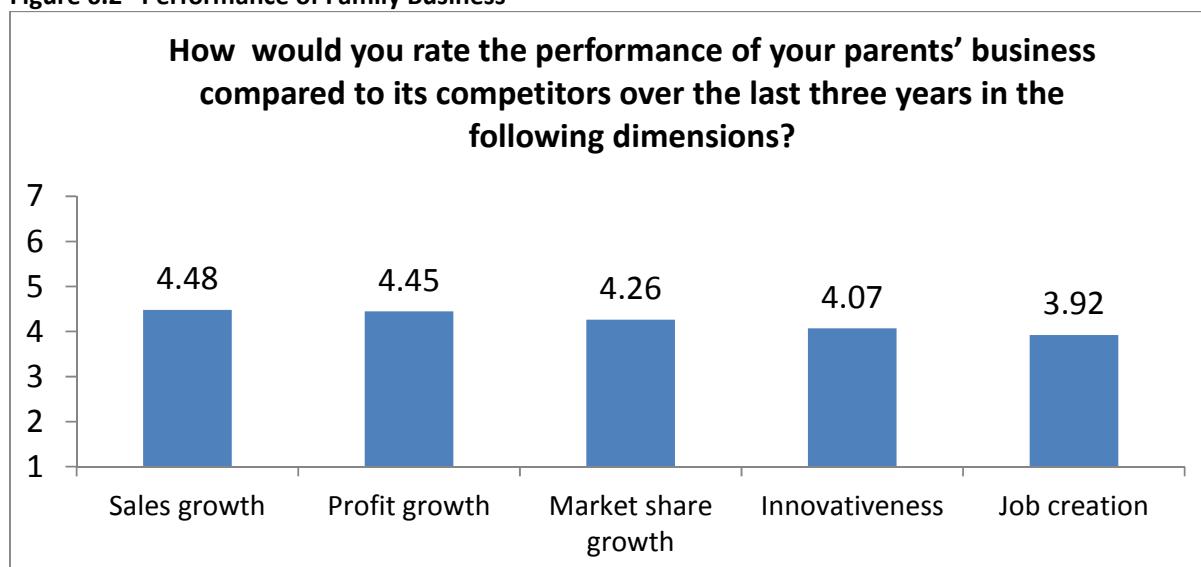
Table 6.1 Characteristics of Parents' Firm

	Characteristics of Parents' Firm (Computed means)				
	No. of Companies Owned	Years owned	Share of family equity (%)	Share of personal Equity (%)	No. of employees
Parents' firm	1.19	14.18	69.14	18.25	34.73

6.3 Performance of Family Business

Students were asked to rate the performance of their family businesses in terms of sales, profit, market share growth, innovativeness and job creation with respect to their competitors, ranging from 1 (much worse), 4 (equal) to 7 (much better). Generally, students feel that their family businesses have performed as well as their competitors in the industry. (Figure 6.2) Performance in areas such as sales (4.48) and profit growth (4.45) are rated slightly higher while other aspects like innovativeness (4.07) and job creation (3.92) are on par with its competitors.

Figure 6.2 Performance of Family Business

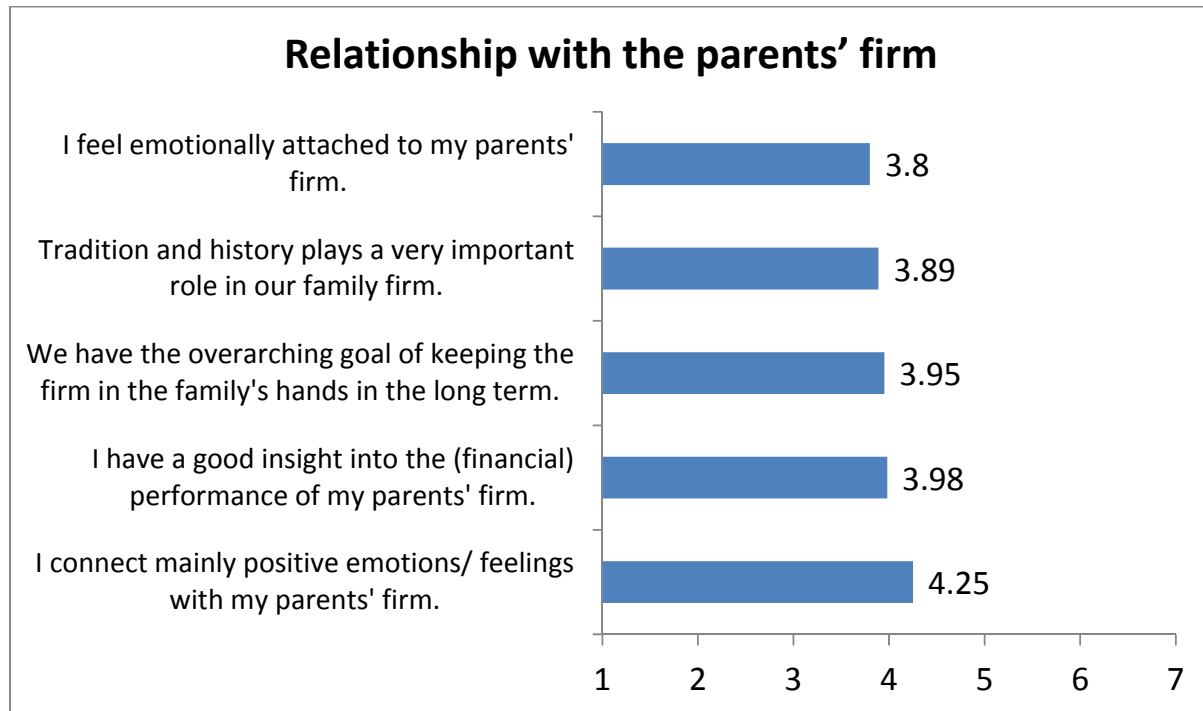


Performance rated on a 7 point scale where 1= much worse, 4= equal and 7= much better.

6.4 Family Firm Orientation

With the exception of emotional connection with the family business (4.25), students are noted to be rather indifferent towards their family business in terms of emotional attachment to their parents' firm (3.8), importance of tradition and history (3.89) and having a good insight into the financial performance of firm (3.98). (Figure 6.3)

Figure 6.3 Family Firm Orientation

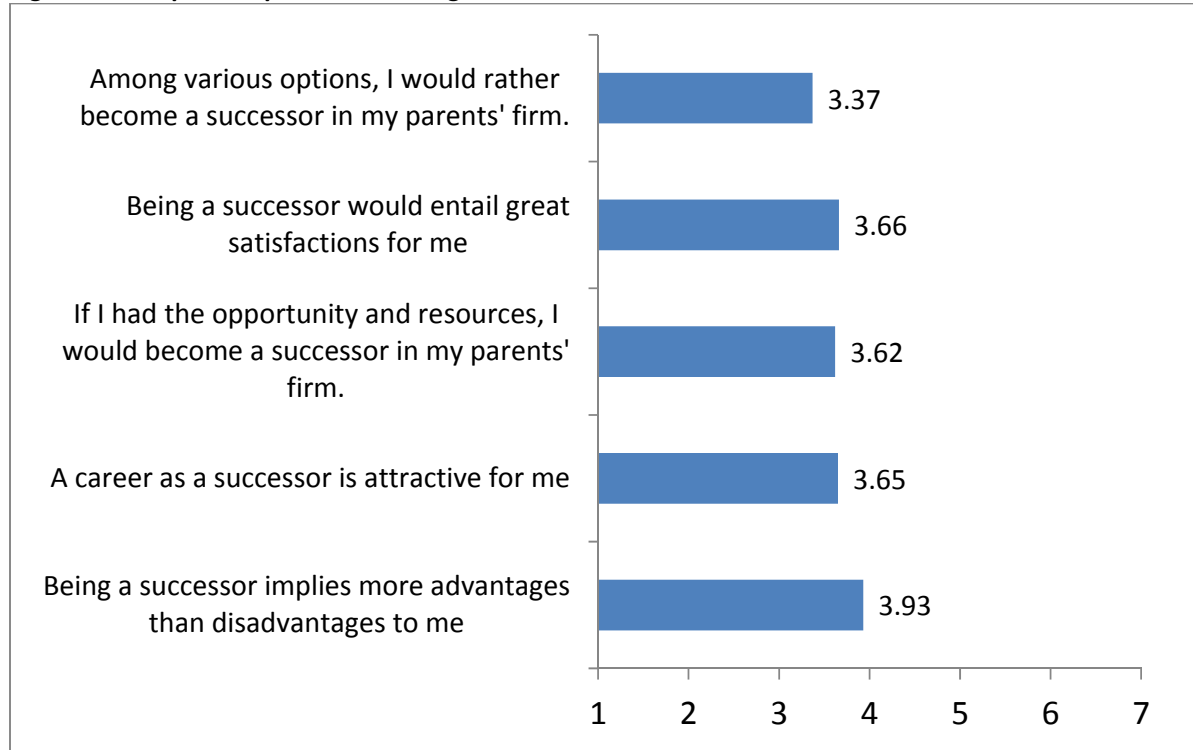


Family firm orientation rated on a 7 point scale where 1= strongly disagree and 7= strongly agree.

6.5 Impression of Being a Successor

Implied impression of being a successor among students is not very positive. In most cases, students disagreed with the statements that they preferred to become a successor (3.37), being a successor would entail great satisfaction (3.66), and attractiveness of a career as a successor (3.65). (Figure 6.4) This is in line with the results derived from the students' responses on their relationship with their family businesses. As students are largely indifferent towards their family businesses, the prospect of becoming a successor to their family businesses is correspondingly not altogether appealing.

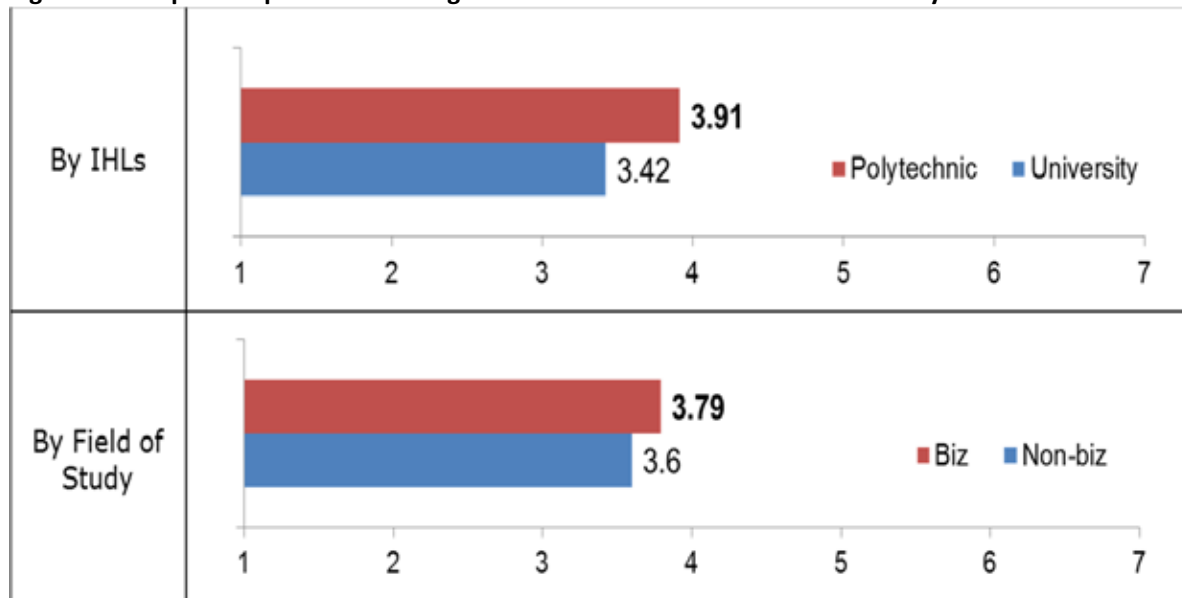
Figure 6.4 Implied Impression of being a Successor



Implied Impression of being a successor rated on a 7 point scale where 1= strongly disagree and 7= strongly agree.

For business students (3.79), implied impression of being a successor is slightly more positive compared to non-business students (3.6) while polytechnic students (3.91) are generally more indifferent towards the idea of becoming a successor for their family businesses compared to university students (3.42). (Figure 6.5)

Figure 6.5 Implied Impression of being a Successor across IHLs and Field of Study

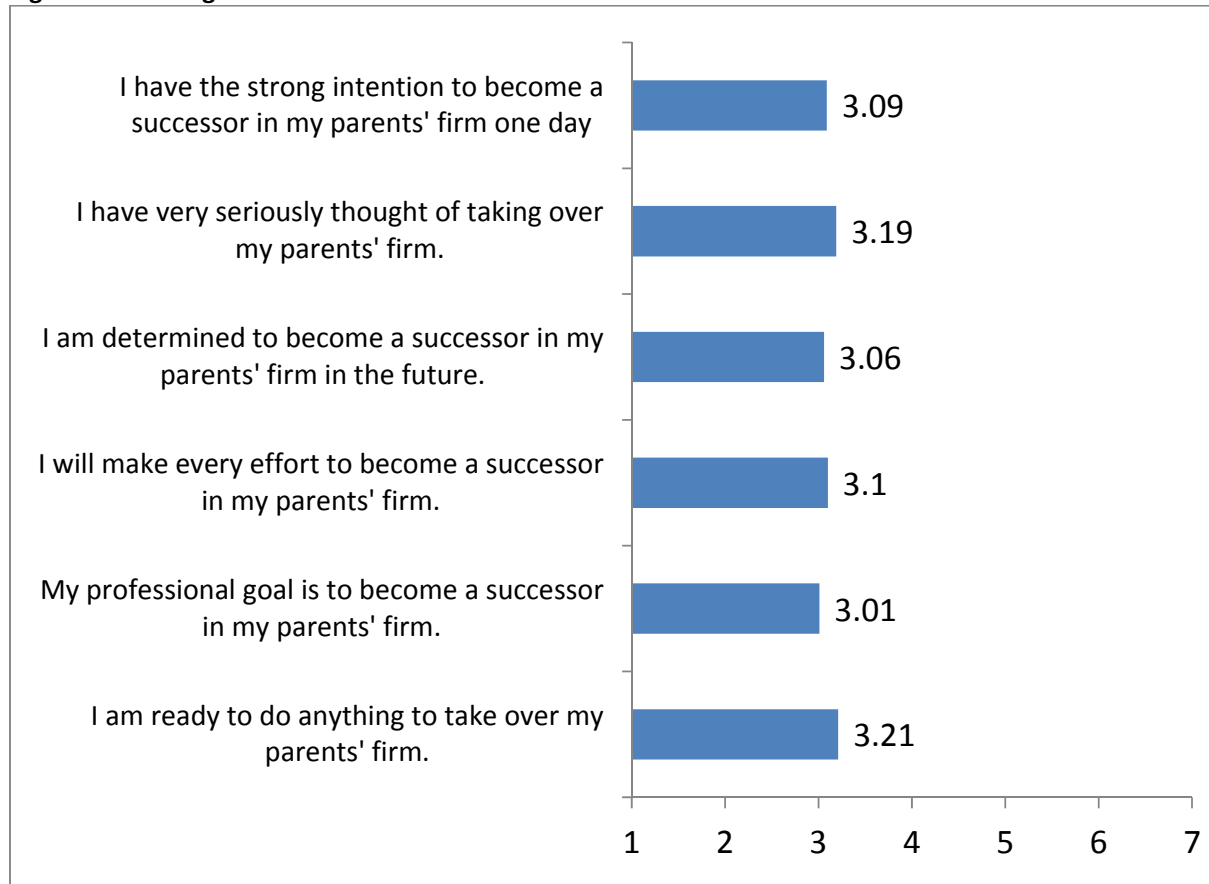


Implied impression of succession rated on a 7 point scale where 1= strongly disagree and 7= strongly agree

6.6 Strength of Succession Intention

Students were asked to indicate their level of agreement to various statements used as a measure to determine the students' strength of succession intention, ranging from 1 (strongly disagree) to 7 (strongly agree). Strength of succession intention among students with family businesses appears to be rather weak. In most cases, students indicated that they rather disagreed with the statements with regards to their determination to become a successor (3.06), professional goal is to become a successor (3.01) and has the strong intention to become a successor (3.09). (Figure 6.6)

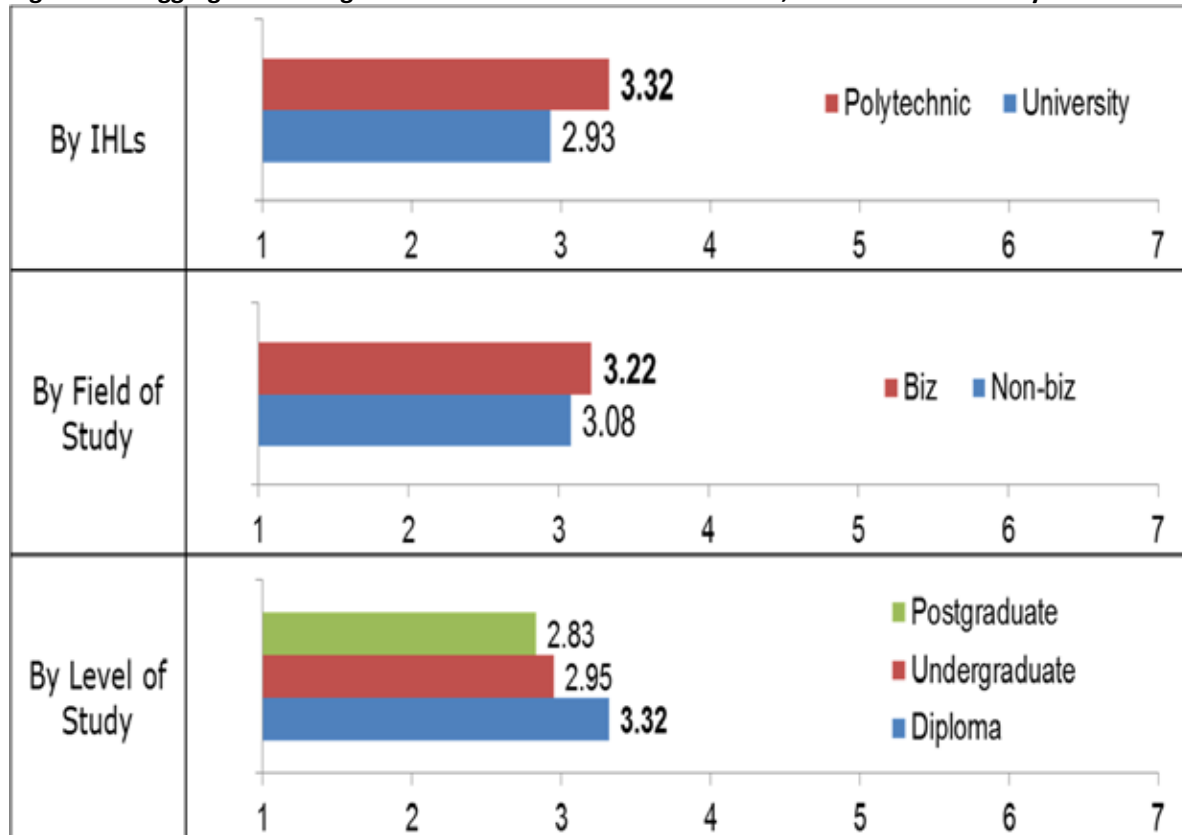
Figure 6.6 Strength of Succession Intention



Strength of succession intention rated on a 7 point scale where 1= strongly disagree and 7= strongly agree

Looking at the strength of succession intention across IHLs, field and level of study of students, aggregated strength of succession intention among polytechnic and business students are noted to be higher. Interestingly, the strength of succession intention among students decreases as students pursue a higher level of education, with the diploma students having the highest strength (3.32) and postgraduate students the lowest (2.83). (Figure 6.7)

Figure 6.7 Aggregated Strength of Succession Intention across IHLs, Field & Level of Study



Strength of succession intention rated on a 7 point scale where 1= strongly disagree and 7= strongly agree

7 CAREER ASPIRATIONS AND ENTREPRENEURIAL INTENTIONS OVER TIME

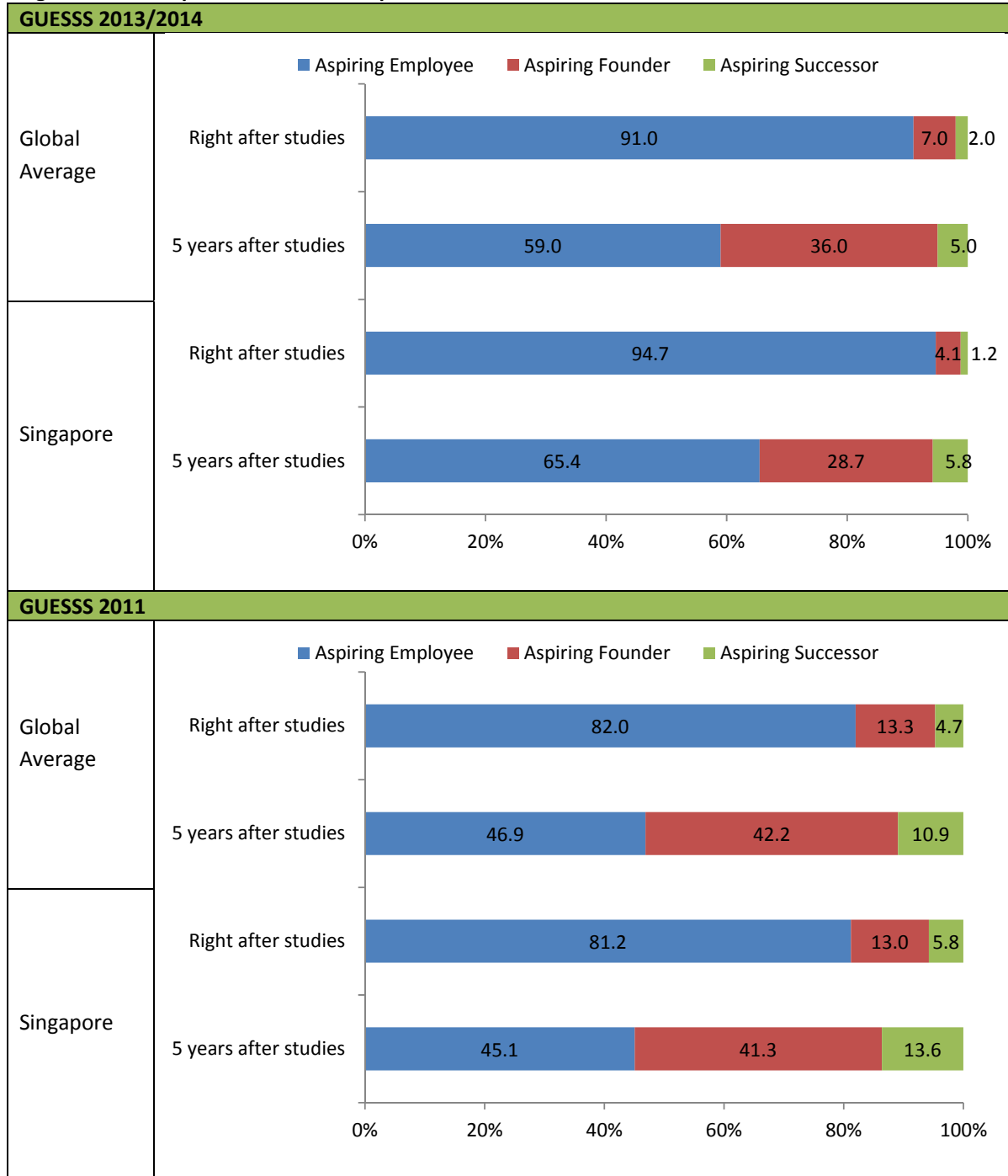
GUESSS was initiated in 2003 and has completed five data collection rounds before the current edition of 2013/2014. The design of the GUESSS study allows us to track the strength of entrepreneurial aspirations and intentions across time. We can therefore evaluate if students' entrepreneurial intentions have been increasing or decreasing compare to the results from previous survey. This chapter presents the comparisons of results between GUESSS 2013 and the previous edition of GUESSS 2011.

While comparing results from GUESSS 2013 and GUESS 2011 is possible, we have to be cautious in interpreting the results due to the limitations and differences over the years. The major differences are in terms of participating countries and participating universities. There are 34 participating countries in 2013/14 edition and 26 countries in 2011 edition. Among them, 20 countries have participated in both editions. At the global level, the number and types of universities representing each country as well as the number of participants from each university and each country varied between 2013 and 2011. In addition, there are slight changes at the question level for the topics discuss in both the GUESSS editions. Nonetheless, with the significantly improved questionnaire, the practical and scientific impacts of GUESSS are strengthened. We also perform the comparisons with caution, with only comparable comparisons presented here. For Singapore students, the same 3 universities and 5 polytechnics were represented in both 2013 and 2011 editions.

Comparing GUESSS 2013/2014 and 2011 results, the percentage of Singapore students aspiring to be involved in entrepreneurial activities immediately after studies, either to found an own company or to take over an existing company, has dropped from 19% in 2011 to 5% in 2013 (**Figure 7.1**). In the longer term, a lower percentage of students (35%) from GUESSS 2013/2014 indicated entrepreneurial aspirations compared to GUESSS 2011 (55%). These decreases in entrepreneurial interest are also observed in global sample that reported lower percentage of aspirations both in immediate and longer terms. While short and long term entrepreneurial aspirations among Singapore students were higher than global average in 2011, this appears to have fallen in 2013/2014 as the percentages of short and long-term aspirations are now lower than the global average. (**Figure 7.2**)

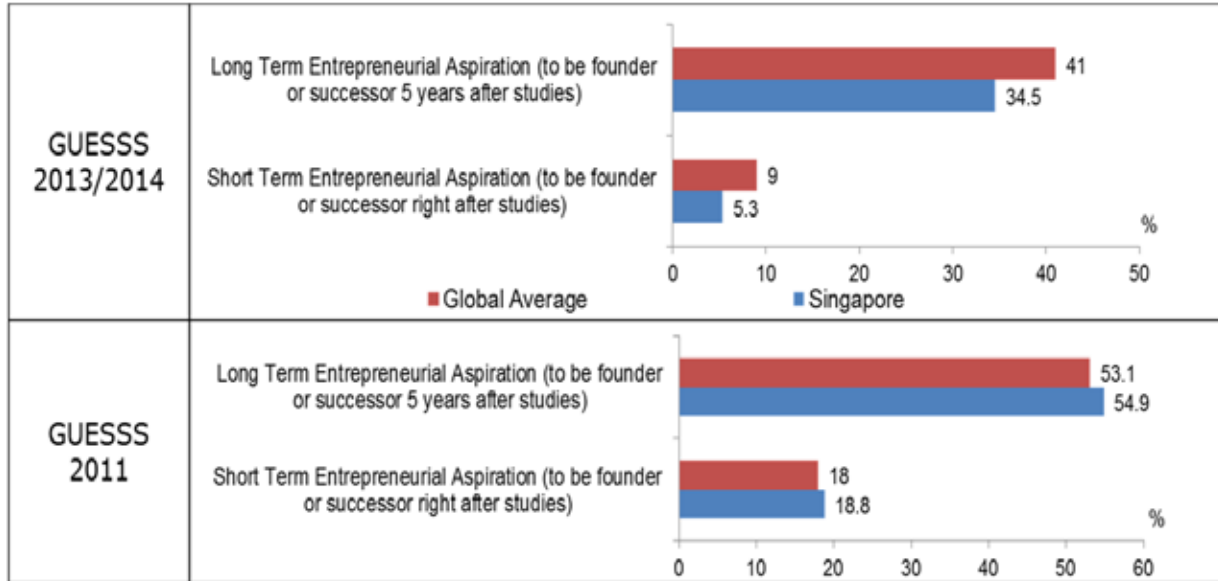
In contrast, GUESSS 2013 results show a higher percentage (4%) of Singapore students running their own business or already self-employed compared to 1% from GUESSS 2011. However, the percentage of active entrepreneurs in Singapore continues to lag behind the global average in 2013/2014 (**Figure 7.3**).

Figure 7.1 Entrepreneurial Career Aspirations, GUESSS 2013/2014 versus GUESSS 2011



Responses as “Fulfilling National Service duty”, “Continue Study” and “Others” were excluded to avoid ambiguities.

Figure 7.2 Entrepreneurial Aspirations, GUESSS 2013/2014 versus GUESSS 2011



Responses as “Fulfilling National Service duty”, “Continue Study” and “Others” were *excluded* to avoid ambiguities.

Figure 7.3 Active Entrepreneurs among Students, GUESSS 2013/2014 versus GUESSS 2011

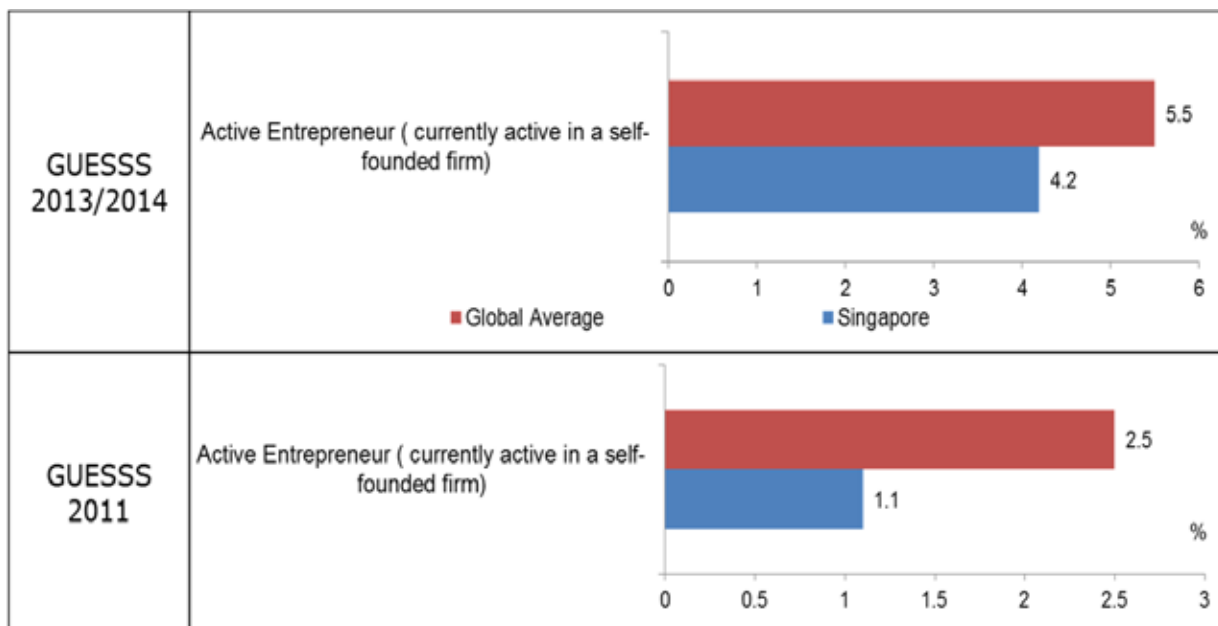


Figure 7.4 traces trends in entrepreneurial aspiration and intention over time, drawing data from the most recent three editions of GUESSS and a survey of IHL students conducted by NUS for the then-NSTB in 2000. Although entrepreneurial interest among students in Singapore remains fairly comparable over the years, a downward trend in both short and long-term entrepreneurial aspirations among students in Singapore is observed over time. On the other hand, the percentage of students who have already started a business has increased significantly and is noted to be the highest (4.2%) in 2013/204 compared to the past years.

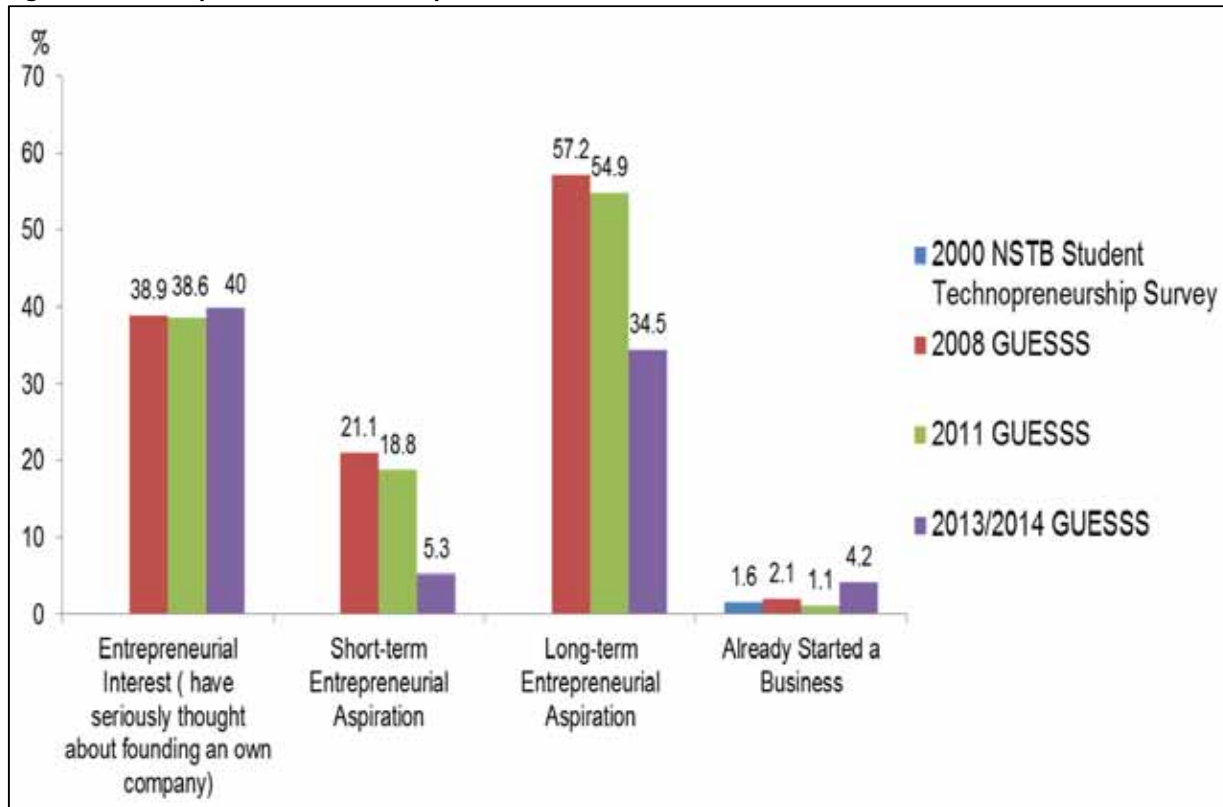
(Figure 7.4)

Taken together, the findings address trends in two groups of students with strong entrepreneurial interest: (i) those who become entrepreneurs while still at school, which has increased over time; (ii) those who view entrepreneurship as a career to be pursued after completing their studies, which has decreased over time within a 5 year timeframe.

For the first group, the increased proportion suggests improvements in conditions and resource availability for students to found their own businesses. This may in part be attributed to the efforts of IHLs to promote campus entrepreneurship, including provision of programs, incubation facilities and access to funding. This may also reflect greater awareness of initiatives to support young and first-time entrepreneurs, such as the ACE Start-up Grant.

For the second group, there are several possible explanations for the declining proportion of those aspiring to become entrepreneurs within 5 years of leaving school. Firstly, the employment market in Singapore continues to be robust with ample job opportunities for fresh and recent IHL graduates. This raises the opportunity costs of entrepreneurship, especially in the short to medium term. Secondly, there has been increasing emphasis in Singapore on technology-driven entrepreneurship which leverages on intellectual property (IP) and innovation. These types of ventures require more sophisticated knowledge of processes and markets, and also take a longer time to gestate. It is possible that potential entrepreneurs in IHLs have adjusted their aspirations beyond 5 years in order to gain the requisite experience and expertise.

Figure 7.4 Entrepreneurial Career Aspirations over Time



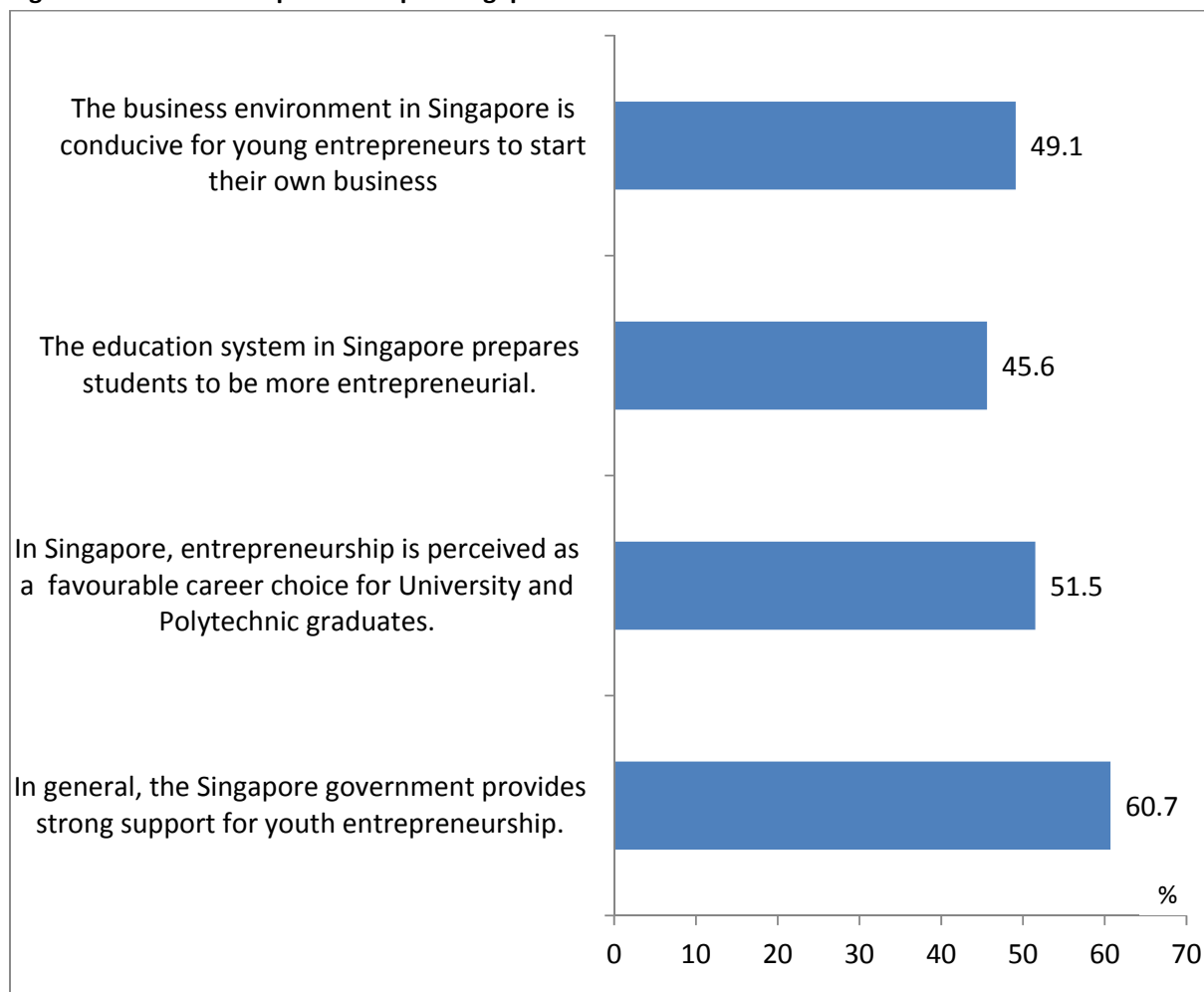
Notes:

- 1) The entrepreneurial aspiration figures for the 2000 NSTB study are computed by assuming no entrepreneurial aspiration among those who indicated little or no interest in starting their own business.
- 2) The measure of Entrepreneurial Interest differs slightly across the studies. In GUESSSS 2013/2014, entrepreneurial interest is computed based on the respondents’ level of agreement to the statement “I have very seriously thought of starting a firm”. In GUESSSS 2011 and GUESSSS 2008, entrepreneurial interest is computed based on a range of responses to the question “Have you ever seriously thought about setting up your own business” which demonstrated the respondents’ interest in entrepreneurship. Caution should be exercised when drawing comparisons.
- 3) Short-term Entrepreneurial Aspiration is measured as “Right after studies” in GUESSSS 2011, and as “within 5 years of graduation” in GUESSSS 2008. Caution should be exercised when drawing comparisons across the two years.
- 4) Long-term entrepreneurial aspiration is measured as “5 years after studies” in GUESSSS 2011, and as “5 years or more after graduation” in GUESSSS 2008. Caution should be exercised when drawing comparisons across the two years.

8 PERCEIVED ENTREPRENEURSHIP ENVIRONMENT IN SINGAPORE

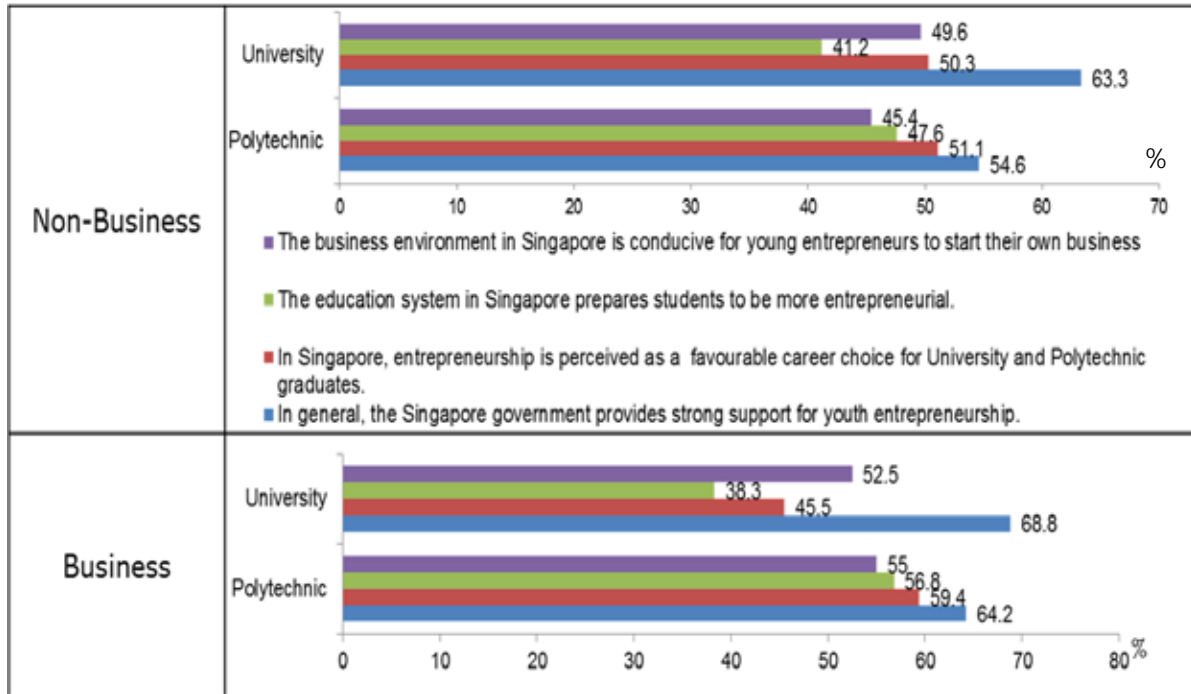
In the latest GUESSS 2013/2014 study, an additional set of questions was included in the survey to find out more about Singapore students' perception of entrepreneurship environment in Singapore. 61% of Singapore students indicated that Singapore government provides strong support for youth entrepreneurship (**Figure 8.1**) In addition, slightly more than half of the students thought entrepreneurship is perceived as a favorable career choice for university and polytechnic graduates. Close to 50% of the Singapore students expressed that the business environment here is conducive to start their own business and their education system prepares students to be more entrepreneurial. Comparing the responses across IHLs and field of study, a higher percentage of university students feel that the Singapore government provides strong support for youth entrepreneurship compared to polytechnic students. (**Figure 8.2**) Furthermore, a surprisingly greater percentage of non- business students in university feel that the education system in Singapore prepares student to be more entrepreneurial (41.2%) and entrepreneurship is perceived as a favorable career (50.3%) compared to business students in university (38.3% and 45.5%).

Figure 8.1 Youth Entrepreneurship in Singapore



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

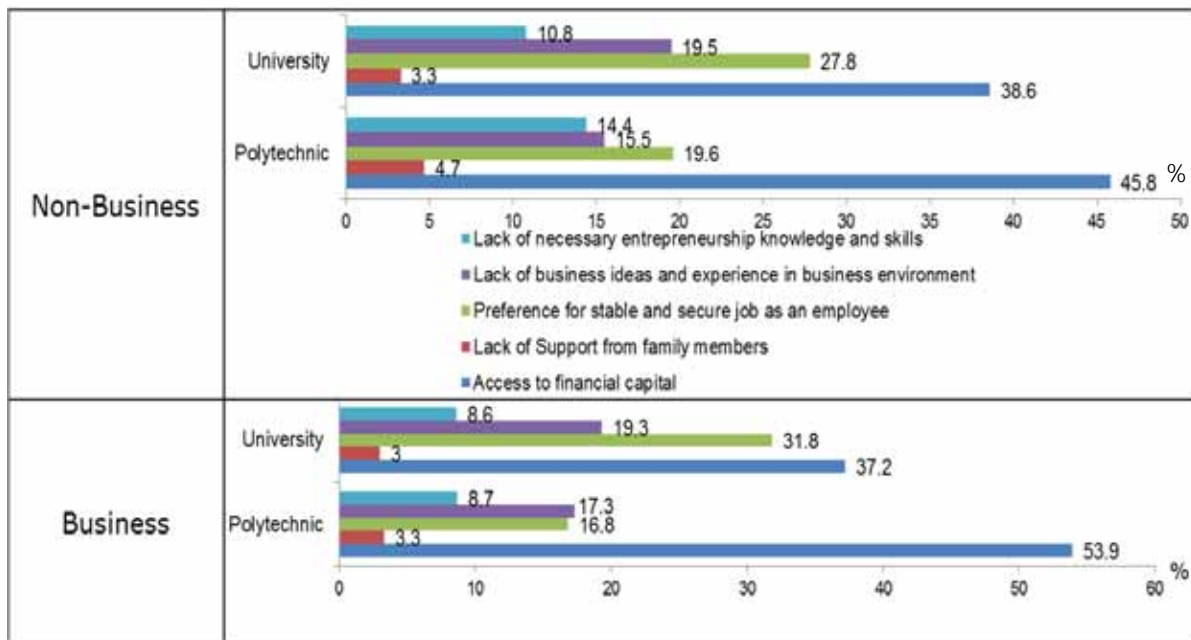
Figure 8.2 Youth Entrepreneurship in Singapore across IHLs and Field of Study



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

Access to financial capital is reported as the most significant barrier for young entrepreneurs starting a business in Singapore, especially among polytechnic students. Additionally, a higher percentage of university students perceive the preference for stable and secure job and the lack of business ideas as one of the top barriers for young entrepreneurs in Singapore compared to polytechnic students. (Figure 8.3)

Figure 8.3 Top Barrier for Young Entrepreneurs to Start a Business in Singapore



Percentage (%) of top barrier for young entrepreneurs to start a business in Singapore

9 CONCLUSIONS

The 6th edition of GUESSS 2013/2014 saw a significantly improved questionnaire being adopted for the global biennial research project and a total of 6,471 responses from the 3 universities and 5 polytechnics in Singapore. For an in-depth understanding of entrepreneurship among students in Singapore, we examined the career aspirations of students, the possible factors which influence entrepreneurial intentions, the entrepreneurship environment in Singapore and most importantly, students who have expressed their interest in entrepreneurship and are trying or have started their own businesses- nascent and active entrepreneurs in Singapore. The study explores and suggests that students' interest in entrepreneurship is shaped by a variety of exogenous and endogenous factors, including the role of IHLs, the role of society, students' own personal characteristics and their family backgrounds. In line with the theoretical framework of GUESSS- Theory of Planned Behaviour, the study further looks into the personal characteristics of students which include the opinions and expectations of family and friends, students' perception of control over their own interests, entrepreneurial self-efficacy and their willingness to take risks, to examine how attitudes and beliefs as proposed in the theory translates into entrepreneurial intentions among students in Singapore.

Overall, the findings from GUESSS Singapore 2013/2014 indicated that there is a healthy level of interest in entrepreneurship among students in Singapore IHLs, with several key indicators found to be higher when compared to the global average and findings from the last GUESSS survey in 2011. In particular, 62.5% of Singapore students demonstrated medium to high entrepreneurial intentions as compared to 53.6% in the global average. The percentage of students currently trying to start their own business or to become self-employed, paints an encouraging picture as well. In Singapore, the number of nascent entrepreneurs stands at 16.3% compared to the global average of 15.1%. Additionally, the percentage of students who have already founded their business (active entrepreneurs) has increased by almost four times to 4.2% in GUESSS 2013/2014 as compared to 1.1% in GUESSS 2011. This suggests improvements in conditions and resource availability or greater awareness of initiatives to support student entrepreneurs which in turn, encourage entrepreneurially-minded students in Singapore IHLs to take more concrete steps to actualize their intentions.

Higher levels of entrepreneurial intentions are observed for particular groups in the study namely, students in business school, students from polytechnic, male students and students with family background of family business. In general, these groups reported a higher percentage of students with medium to high entrepreneurial intentions. Corresponding to the strength of entrepreneurial intentions, these particular groups reported significantly more favourable impressions of entrepreneurship, received more positive reaction from the people around them, and possessed higher perception of control and entrepreneurial self-efficacy and greater willingness to take risks.

A comparison between local and foreign students studying in Singapore IHLs further revealed that foreign-nationality students have stronger entrepreneurial intention (67% rating medium to high intention) compared to local students who are Singapore citizens (60%). However, the rate of active entrepreneurship is higher among local students (4.1% compared to 3.1% for foreign students). In addition, short-term entrepreneurial aspiration is more prevalent among local students (4.7% aspiring founders) than foreign students (2.9%). This trend is reversed in the longer term with higher proportions of aspiring founders among foreign students (33%) than local students (27%).

The study also shows that Singapore IHLs play an important role in fostering a positive environment for students to engage in entrepreneurial activities and for like-minded entrepreneurial students to meet. Singapore IHLs are perceived to provide programs that are helpful in equipping students with knowledge about entrepreneurship and skills to become an entrepreneur. Among those who have attended the programs, more than half of the students felt that the programs enhanced their ability to identify opportunity and develop networks, skills deemed crucial for entrepreneurship. This percentage is much higher for nascent and active student entrepreneurs. This testifies to the success of local IHLs in putting in place effective entrepreneurship programs and stresses the importance for IHLs to continue to provide entrepreneurial programs on campus.

A key observation from the GUESSS 2013/2014 is the heavy emphasis on teamwork in entrepreneurial activities among Singapore IHL students. As many as 87.7% of nascent entrepreneurs intend to found their company with at least 1 other co-founder while 70.9% of active entrepreneurs have already started their businesses with at least 1 co-founder. Significantly, Singapore's IHLs provide an environment for team-based venture formation by students. Almost two-thirds of nascent entrepreneurs and half of active entrepreneurs met their co-founders in the university or polytechnic.

There are also notable differences between university and polytechnic students in terms of their entrepreneurial intentions and industry profile of potential businesses that they plan to start. While polytechnic students demonstrate greater short term entrepreneurial aspirations, the percentage of university students with long term entrepreneurial aspirations is significantly higher. This implies a difference in attitudes towards entrepreneurship among students in university and polytechnics, with a larger proportion of university students preferring to spend time working before they engage in entrepreneurial activities. Compared to polytechnic students, university students are focused on starting their businesses in information technology & communication or the wholesale & retail sector while the majority of polytechnic students are mainly interested in the wholesale & retail sector.

Another key aspect is the “first employee, then founder” pattern observed in the career aspirations of Singapore students. Only 2.4% (or 4.1% if excluding those with NS obligations and intentions to pursue further studies) of students aspire to become a founder and less than 1% (1.2%) of the students intend to take over an existing business immediately after studies. This proportion increases almost seven-fold for aspiring founders and more than four times for aspiring successors in the longer term (5 years after studies). This implies that entrepreneurship among students in Singapore is still very much viewed as a longer-term career option, similar to findings observed in GUESSS 2011. As such, this may suggest that the effectiveness of IHLs in Singapore in influencing entrepreneurial intentions of students may be very much limited as most students still do not consider entrepreneurship an option immediately after studies.

Despite having medium to strong entrepreneurial intentions, many students in Singapore IHLs are not intending to pursue a career in entrepreneurship within the next 5 years. While the percentage of active student entrepreneurs in Singapore has increased significantly, the proportion is still lower as compared to global average. Moreover, the share of students who aspire to entrepreneurship as a career in the foreseeable future is lower when compared to global average as well. As such, there are two key challenges: firstly to translate this interest into actual entrepreneurial engagement and secondly to sustain interest among IHL students to maximize entrepreneurial engagement in the longer term.

More importantly, there is a noticeable trend of decreasing entrepreneurial career aspiration among students in Singapore IHLs since 2000. While entrepreneurial interest among students have remained fairly comparable over the years, both short (immediately after studies) and longer (5 years after studies) term entrepreneurial aspirations among students have been falling. This is partly explained by global trends where similar decline in aspiration is observed on a world-wide basis. In the Singapore context, declining aspiration for entrepreneurial careers in the short to medium term may be attributed to a robust employment market which raises the opportunity costs of entrepreneurship. Potential entrepreneurs in IHLs may also have adjusted entrepreneurial aspirations to a longer-term timeframe (beyond 5 years after graduation) in order to gain experience and expertise required for more complex ventures, such as technology-based entrepreneurship which is increasingly emphasized in national policies.

In addition, access to financial capital has been continuously ranked as the top barrier for young entrepreneurs in Singapore since GUESSS 2011. The lack of access to available early-stage funding may constrain the ability of new graduates to engage in entrepreneurial activities and thus discourage interest in entrepreneurship among students completely. Furthermore, there is a perceived lack of innovation-related skills among students in Singapore. Innovation related skills such as creating new products and services or managing innovation within a firm are ranked among the lowest in entrepreneurial self-efficacy. This perhaps suggests a need for Singapore IHLs to place greater emphasis on programs which focuses on the development of innovation-related skills.

Given the nature of entrepreneurship and the “first employee, then founder” pattern observed among the majority of students in Singapore, it may be much more appropriate for us to take a long-term approach towards evaluating entrepreneurial behaviour and measuring the impact of IHL entrepreneurial programs on student entrepreneurship in Singapore. Possible approaches could include examining the entrepreneurial intentions of Singapore IHL students over a longer time frame instead of the 5 years framework stipulated in the survey or maintaining a long-term engagement with students even after the survey. This may help to provide better insights into the students’ entrepreneurial intentions and the effectiveness of efforts aimed at promoting student entrepreneurship in Singapore. Henceforth, while Singapore IHLs have been effective in providing beneficial entrepreneurial programs and a favourable environment for entrepreneurship, the various findings suggest that translating these into concrete venture creation by students is a more complex challenge. Based on students’ perceptions of barriers, improving the issue of access to financial capital among young entrepreneurs may be a good starting point. However, it is debatable whether student venture creation should be the desired outcome of entrepreneurship promotion at IHLs. Given the long-term nature of entrepreneurial aspirations, it may be more appropriate for IHLs to set different objectives that are oriented towards nurturing entrepreneurial mind-sets, imparting skills and facilitating sustainable networks.

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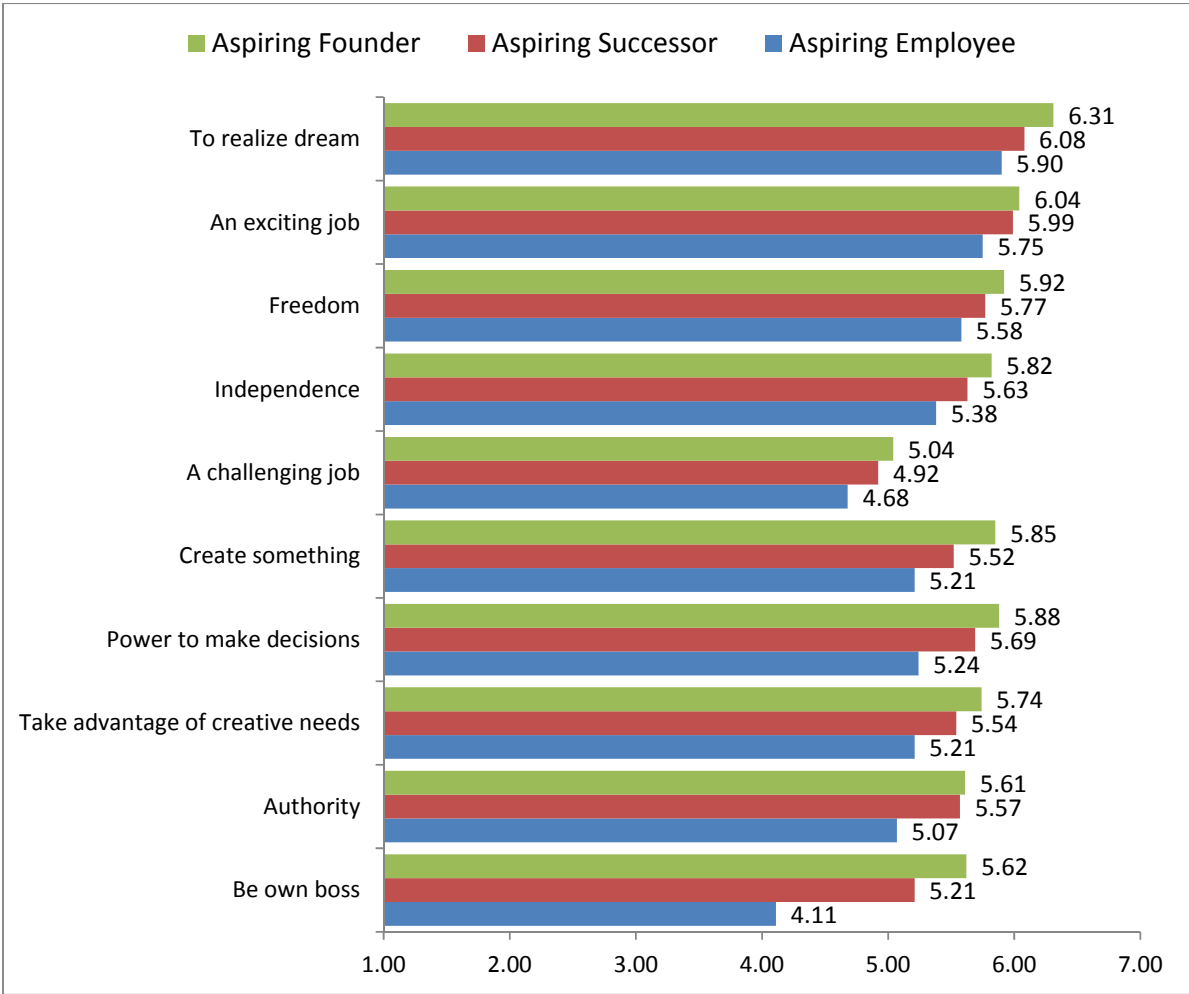
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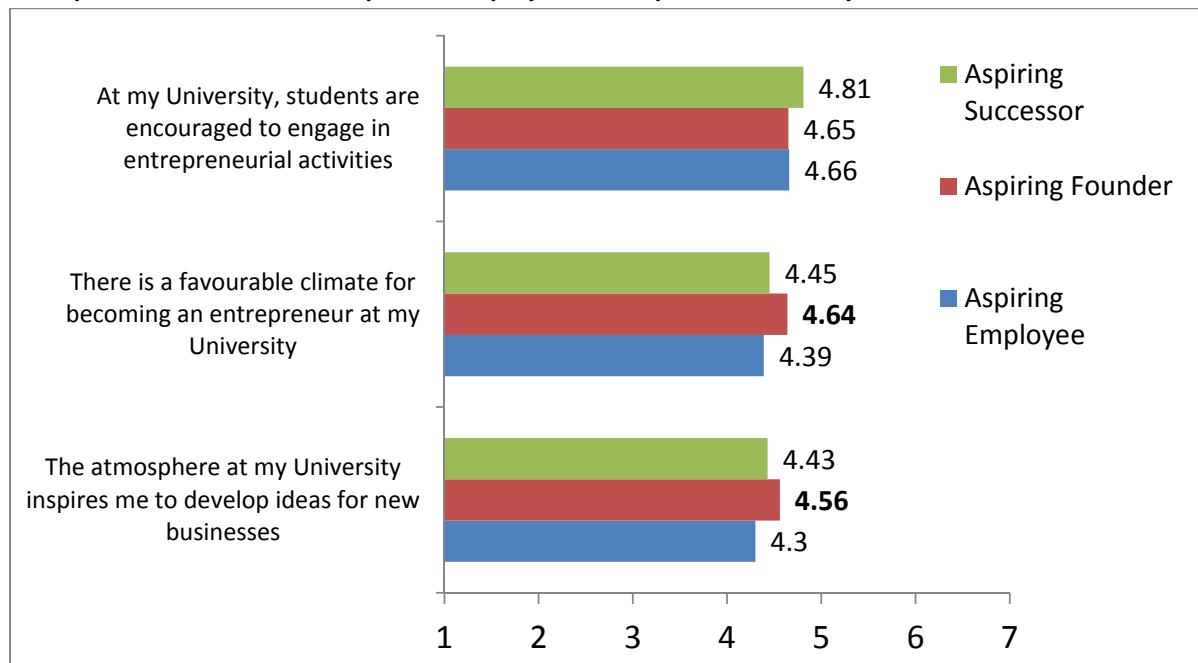
ANNEX A
Career Choice Motives according to Career Aspirations, 5 years after Studies



Importance of career motives rated on 7-point scale where 1 = not important and 7 = very important

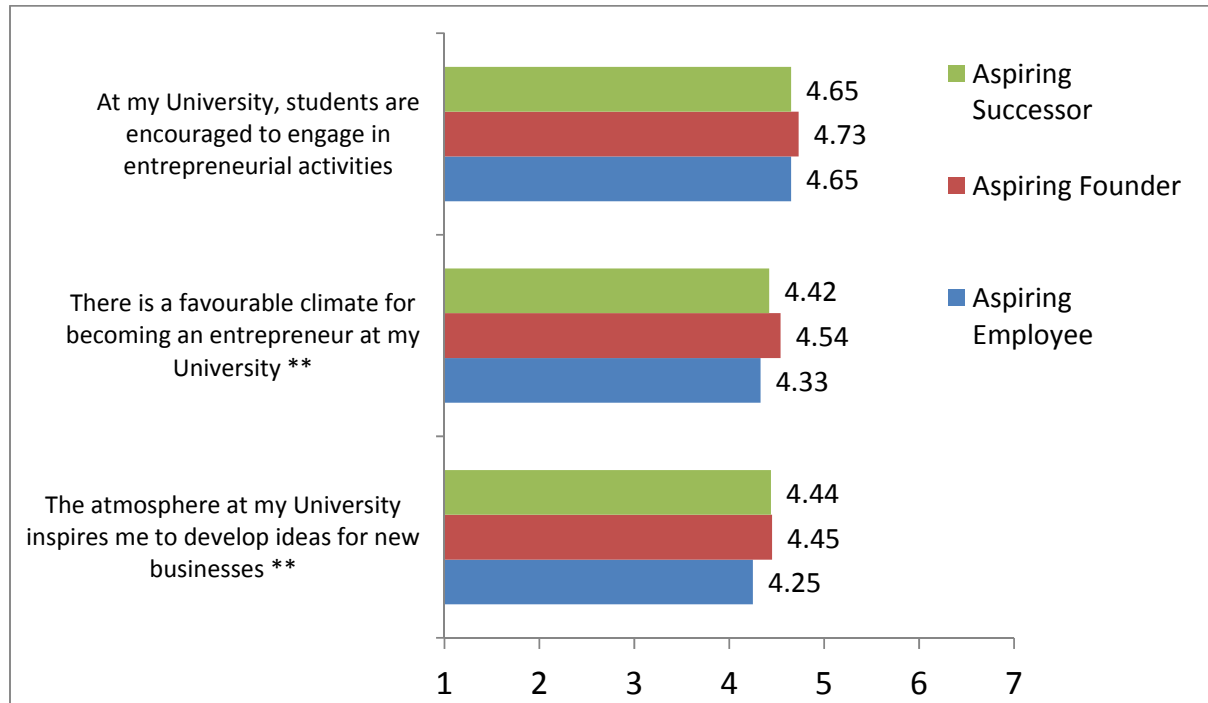
ANNEX B

Perception of Climate for Entrepreneurship by Career Aspirations, directly after Studies



Perception of Climate rated on 7- point scale where 1= strongly disagree and 7= strongly agree

Perception of Climate for Entrepreneurship by Career Aspirations, 5 years after Studies



Perception of Climate rated on 7- point scale where 1= strongly disagree and 7= strongly agree

ANNEX C:
Participation (%) in Entrepreneurship Programs given Career Aspirations right after studies

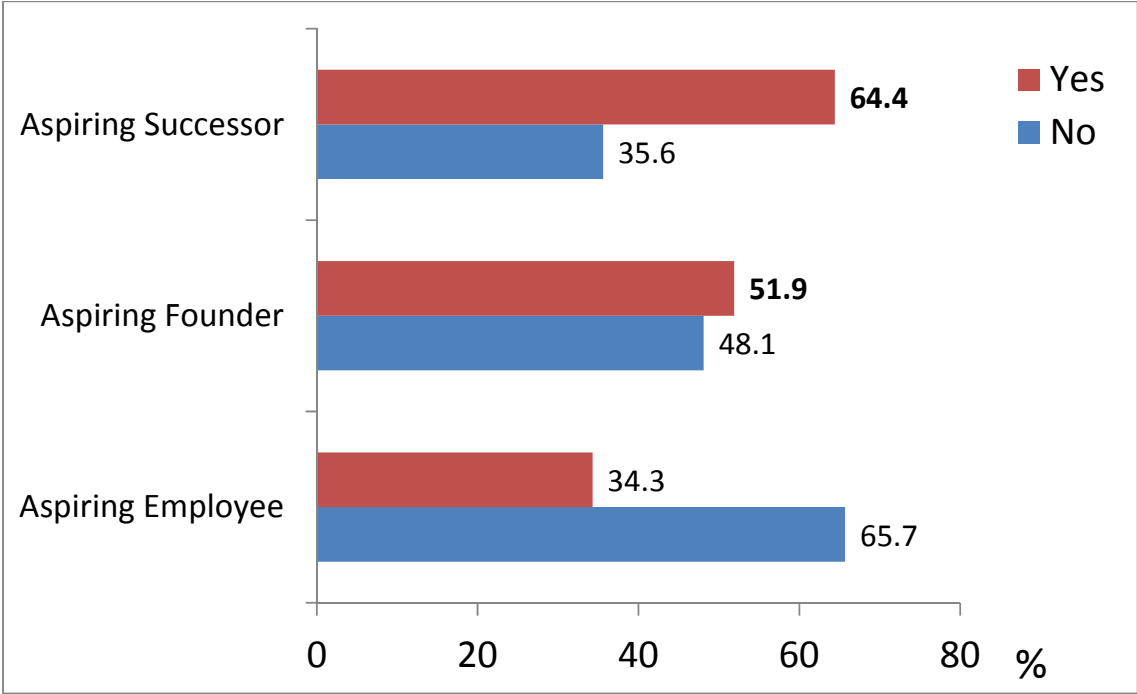
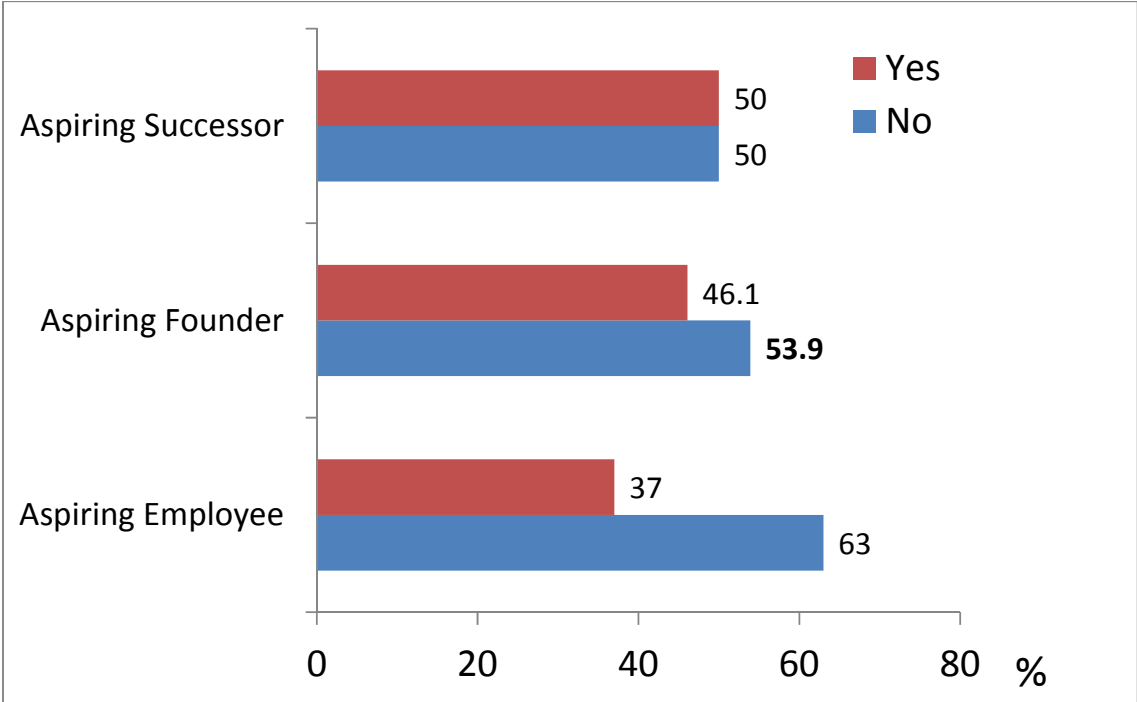
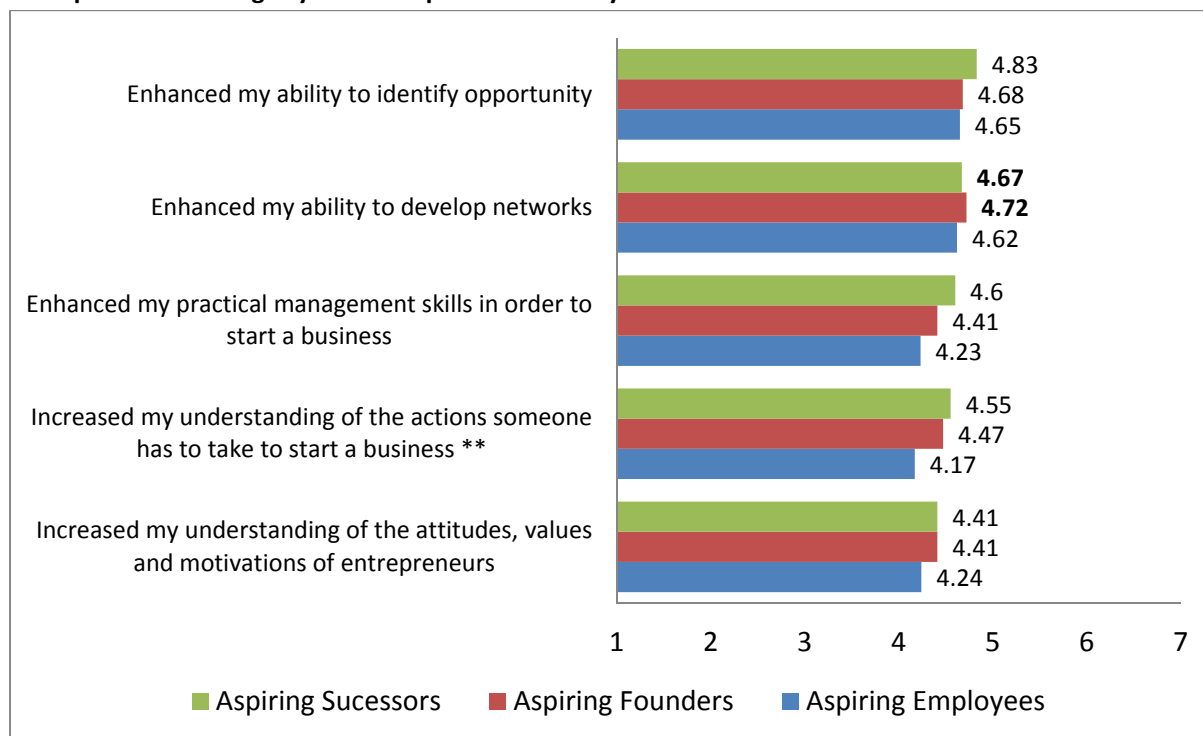


Figure 3.19 Participation (%) in Entrepreneurship Programs given Career Aspirations 5 years after studies



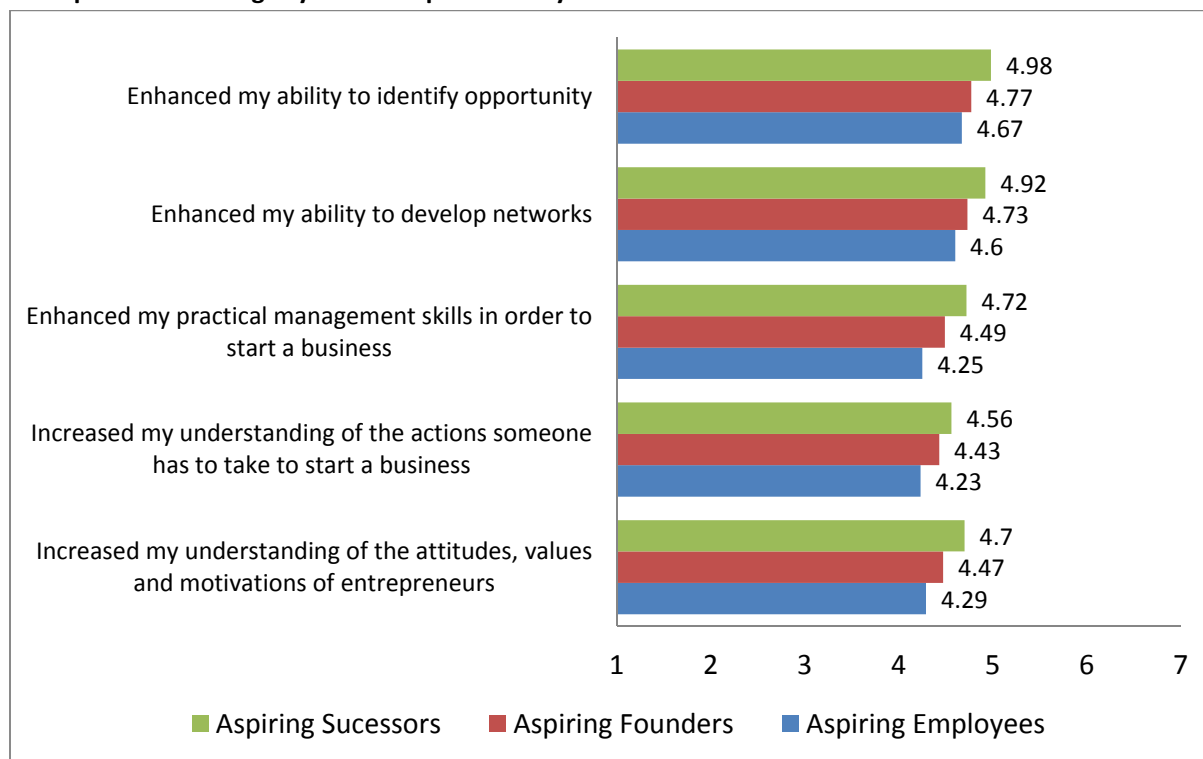
ANNEX D

Perception of Offerings by Career Aspirations directly after studies



Perception of Offerings rated on 7- point scale where 1= strongly disagree and 7= strongly agree

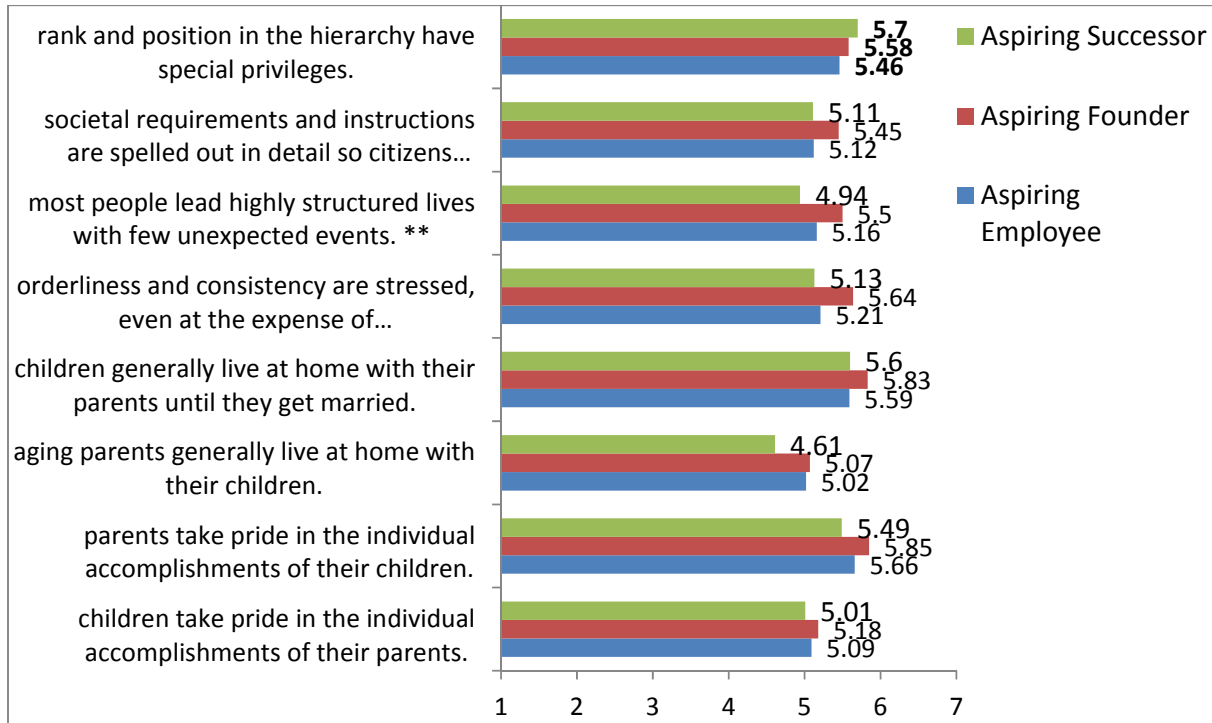
Perception of Offerings by Career Aspirations 5 years after studies



Perception of Offerings rated on 7- point scale where 1= strongly disagree and 7= strongly agree

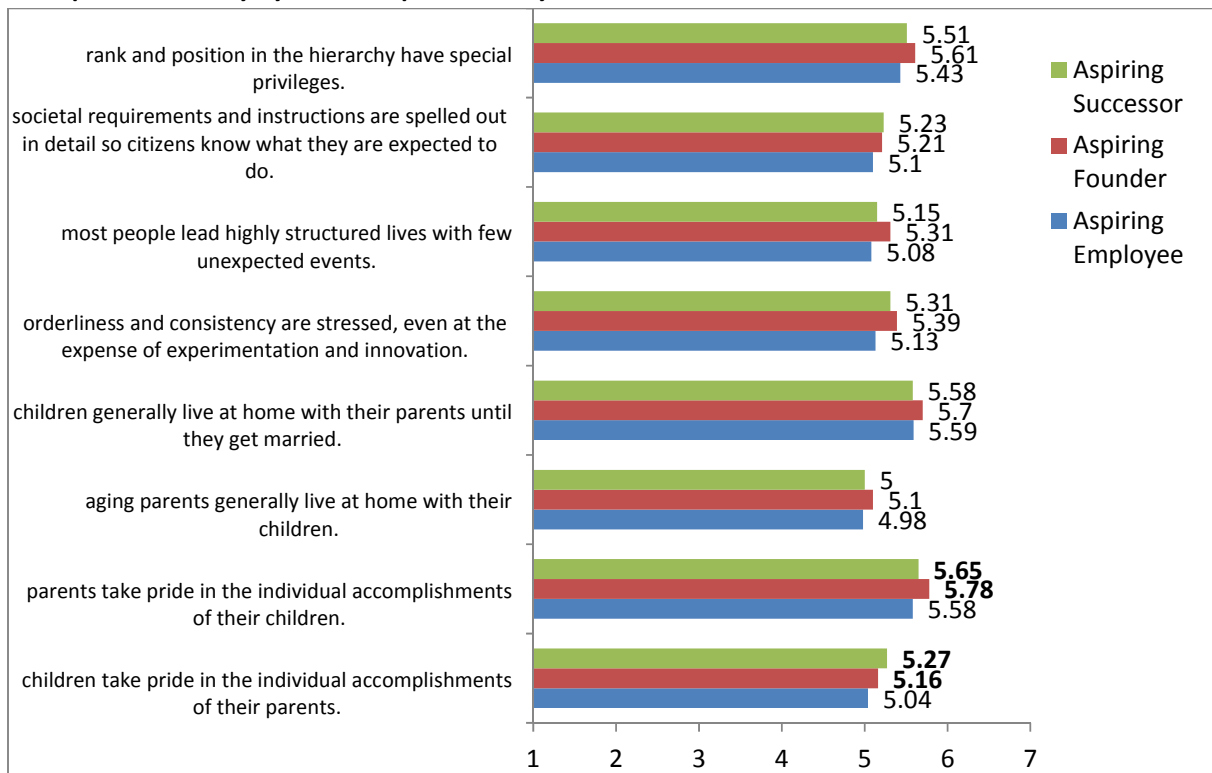
ANNEX E

Perception of Society by Career Aspirations, directly after studies



Perception of Society rated on scale where 1= strongly disagree and 7= strongly agree

Perception of Society by Career Aspirations, 5 years after studies



Perception of Society rated on scale where 1= strongly disagree and 7= strongly agree

ANNEX F

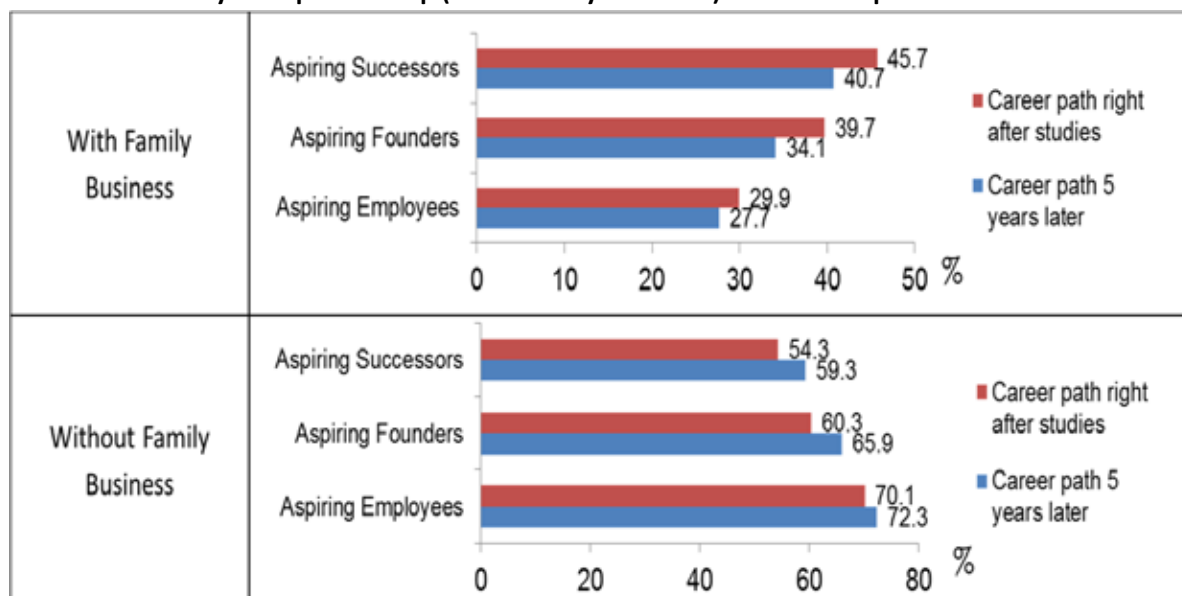
Implied Impression of Entrepreneurship among Singapore Students across IHLs and Field of Study

	Business			Non-Business			Total		
	University	Polytechnic	Total	University	Polytechnic	Total	University	Polytechnic	Total
Being an entrepreneur implies more advantages than disadvantages to me.	4.62	4.66	4.65	4.31	4.29	4.30	4.37	4.39	4.38
A career as entrepreneur is attractive for me.	4.67	4.80	4.75	4.31	4.27	4.29	4.38	4.42	4.40
If I had the opportunity and resources, I would become an entrepreneur.	5.24	5.37	5.32	4.81	4.82	4.81	4.89	4.97	4.94
Being an entrepreneur would entail great satisfactions for me.	5.07	5.10	5.09	4.58	4.47	4.52	4.68	4.65	4.66
Among various options, I would rather become an entrepreneur.	4.50	4.64	4.59	4.07	4.02	4.05	4.16	4.20	4.18
Implied impression/perception of entrepreneurship	4.82	4.91	4.88	4.42	4.37	4.39	4.50	4.53	4.51

Implied impression of entrepreneurship rated on 7-point scale where 1 = strongly disagree and 7 = strongly agree

ANNEX G

Influence of Family Entrepreneurship (Other Family members) on Career Aspirations



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 (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.

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.



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