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VOLKSWIRTSCHAFTLICHE BERATUNG

Monitoring report 2016

CTI Entrepreneurship

B,S,S. Volkswirtschaftliche Beratung
in collaboration with
KMU Forschung Austria

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Monitoring report 2016 CTI Entrepreneurship

For the attention of the Commission for Technology and Innovation (CTI)

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Executive summary

The Commission for Technology and Innovation CTI funds training programmes at Swiss universities aimed at university members and company founders under the ‘CTI Entrepreneurship’ brand. The aim is to create an environment in which knowledge- and technology-based start-ups can thrive. The four modules can be characterised as follows:

- Module 1 (Business Ideas): Raising awareness of what it means to set up a company, aimed at university members. Duration: two hours.
- Module 2 (Business Concept): Semester evening course for university members with business ideas who intend to set up a company.
- Module 3 (Business Creation): Five-day intensive course on preparing to set up a business.
- Module 4 (Business Growth): Five-day course on the development and implementation of growth strategies. Aimed at people who have already founded a start-up.

The four CTI Entrepreneurship modules are run by the Institut für Jungunternehmen in St. Gallen (module 1) and other universities (modules 2-4). The universities are organised in three consortia: East Region, West Region and Central Switzerland Region.

The company B,S,S. Volkswirtschaftliche Beratung was commissioned to evaluate the execution of modules 1-4. Part of this evaluation involves a survey of participants in modules 2-4. Each participant will be surveyed three times in total: at the beginning of the course, at the end of the course, and six months after course completion. The three questionnaires are referred to in the following as QI–III. These are census surveys, i.e. in principle all course participants are invited to participate. In addition, during the first half of 2017, other students who did not take part in a CTI Entrepreneurship course will also be surveyed as a control group.

This report presents the results of the participant survey for 2016, although at the time of analysis, not all the results of questionnaire QIII (i.e. six months after the end of the course) were available. A total of 80 courses with 3,782 participants were run in 2016; 56 were in modules 2-4, 55 of which since the beginning of the survey in the spring of 2016 (the participants of one course could not be surveyed). A total of 1,035 people took part in the 55 courses in modules 2-4 that were included in the survey. The response rate was between 46% and 73%, depending on the module and questionnaire (QI, QII or QIII). These are excellent figures for an online survey.

Some 20-25% of course participants in modules 2-4 are from the field of engineering and environment. Individuals with an educational background in basic sciences are particularly well represented in module 2. Furthermore, many participants come from the fields of computing and communication sciences and business and management (the latter particularly in modules 3 and 4).

Participants’ satisfaction with the courses is high overall; the average satisfaction rating for the various modules (depending on the exact question) was between 5.6 and 6.1 on a 7-point Likert scale, where 1 is the lowest and 7 is the highest ranking.

When asked about other potential teaching methods, between 59% and 72% of participants (again depending on the module) stated they would like to see other teaching methods. Between 46% and 59% of those who would like to see other teaching methods are keen on the idea of more direct coaching.

38% of participants in module 2 indicate that they were looking for a business partner at the beginning of the course; of these individuals, 54% had found someone they can imagine as a business partner or with whom they had already concluded an agreement by the end of the module. In module 3, too, many participants (43%) found a (potential) business partner, 23% of whom found a business partner during the course.

The participants are highly motivated to set up a business in future. The motivation values concerning the desire to become an entrepreneur are between 6.1 and 6.5 on the 7-point Likert scale at the beginning of the course, where once again 7 is the highest rating. Course participants rate their own general competencies that are relevant to setting up a business (e.g. making decisions involving uncertainty), and their own chances of success in setting up a company very highly before the course (depending on the module and exact question, between 4.5 and 6.0 on the 7-point Likert scale). After the course they rate the relevant competencies better in most cases, or at least as highly as before the course (between 4.9 and 6.2 on the 7-point Likert scale). This means that generally speaking, the course helps participants acquire the general competencies that are needed to set up a business. In addition, the survey also looks at whether course participants who have yet to set up a business think that they will have done so two years after the course. This subjective assessment regarding setting up a business in future decreases slightly over time. Six months after the end of the course, participants are less optimistic about actually setting up a business than when they attended the course (for participants on module 2, the stated likelihood of setting up a company falls from 4.8 to 3.7 (on the 7-point Likert scale), while for the participants in module 3 it falls from 6.0 to 5.2).

Concerning the self-assessment of relevant technical competencies, differences are apparent between the modules. Participants in module 2 rate their own technical competencies needed to set up a company as rather low before the course (on average 3.4 on the 7-point Likert scale). According to the self-assessment, the course helped them significantly improve their competencies (participants rate their competency development as 5.4 on average on a 7-point Likert scale). Participants in modules 3 and 4 rate their competencies higher before the course (average values of 5.4 for module 3 and 5.8 for module 4), but they too state that they learned a great deal on the course (average rating of 5.0 in each case). Six months after the end of the course, many participants state that they have been able to make use of what they learned (average ratings between 4.8 and 5.0).

99 CTI Entrepreneurship participants work for start-ups that already have their first clients (6 participants in module 2, 34 participants in module 3 and 59 participants in module 4); and 36 participants report revenues of more than CHF 300,000 per year (1 from module 2, 2 from module 3 and 33 from module 4). 135 CTI Entrepreneurship participants work for start-ups that already employ staff (an average of 6 employees per company). The breakdown by module is as follows: 8 participants in module 2 work for companies that employ staff, 58 in module 3 and 69 in module 4.

Details of the survey (all results, broken down by module and consortium) are compiled in the separate tables in the appendix.

1. Introduction

Context and organisation of the survey: The CTI funds the courses run within the scope of the CTI Entrepreneurship programme. Courses are offered in a total of four modules; in 2016, the CTI provided funding of CHF 4.275 million for the courses in all four modules. As part of the evaluation of CTI Entrepreneurship, between 2016 and 2018 the company B,S,S. Volkswirtschaftliche Beratung is inviting all participants in modules 2 to 4 (Business Concept, Business Creation and Business Growth) by email to take part in an online survey. The main aim of the survey is to examine the effectiveness of the courses in question. The CTI Entrepreneurship courses are run by the three consortia: 'West', 'Zurich/East' and 'Central Switzerland'. The consortia are supporting the survey by providing B,S,S. with the email addresses of participants, informing participants about the survey in courses and giving participants time to fill in the questionnaires. In addition, the consortia are providing participant details that are recorded in *Podio*, the consortia's web-based database. This ensures that participants are not asked to provide the same information more than once during the survey.

Reporting interval: Every six months the results of the participant survey are recorded in a semi-annual or annual report (referred to as 'monitoring report' in the following). This report is therefore the first of a series of three monitoring reports compiled on an annual basis. At the end of the semester, the results will be compiled and summarised in a table. They will be available at the end of Q3. The final monitoring report will be compiled in February 2019.

Target audience of the monitoring reports: The target audience of the monitoring reports is the CTI (funding areas Start-up and Entrepreneurship, Secretariat and Board), and from 2018 Innosuisse (Board and Innovation Council as well as Management); start-up promotion coaches, course providers, policy makers and the general public.

Content: The monitoring reports contain descriptive statistics of the central survey results. The monitoring reports incorporate all the participant responses that are available at the time of analysis. This second monitoring report therefore includes the responses from the first two half-year periods. More detailed analyses of the results including a discussion on potential causal relationships will be presented in the evaluation report in 2018.

Control group survey: A control group survey will also be conducted in 2017 at two universities: the ETH Zurich and the Haute École d'Ingénierie et de Gestion du Canton de Vaud (HEIG) in Yverdon. The survey was launched in the spring and the results should be available in the next monitoring report.

Structure: This monitoring report is structured as follows: the first section briefly explains the context of the survey. The next section presents information on the response rate and the respondents, and the main results. Finally, the appendix contains more detailed analyses for each of the three consortia.

2. Background to the participant survey

2.1. Survey context

The participant survey is part of a comprehensive evaluation of CTI Entrepreneurship courses, which B,S,S. Volkswirtschaftliche Beratung is conducting on behalf of the CTI. As a basis for the evaluation, an impact model was created that presents the underlying impact chain. This impact model takes into account the existing framework conditions in which CTI Entrepreneurship operates, such as regulations and cultural aspects, highlights which inputs and resources are invested in CTI Entrepreneurship, presents the central aspects of programme implementation; and differentiates the various impacts (output, outcome, impact).

The evaluation contains expert assessments of the concept of CTI Entrepreneurship, its implementation and impact. This involves, among other things, assessing course content and interviewing various stakeholders. On the whole, a triangulation approach is taken, which combines quantitative and qualitative elements. The participant survey focuses on the impact of the courses, and participants' intentions and behaviour.

2.2. Survey structure

For the survey, all participants of the modules 'Business Concept', 'Business Creation' and 'Business Growth' will be invited to complete the relevant online questionnaires between 2016 and 2018. It is therefore a full census. Information already available about participants that is collected by the consortia (and entered in the data management system *Podio*) is not requested again; the survey results will, however, be supplemented with existing information.

In the survey period, around 150 courses with a total of around 2,000 to 2,800 participants will take place. Each participant will be surveyed three times:

- At the beginning of the course (QI)
- At the end of the course (QII)
- Six months after the end of the course (QIII)

Some of the questions are asked in the same way at different times. This allows changes in participants to be gauged. For one semester (spring 2017), an additional control group survey is being conducted for the ‘Business Concept’ module (see Chapter 0).

2.3. Theoretical framework

If we wish to examine the effectiveness of CTI Entrepreneurship, we need to bear in mind that the journey from an initial business idea to founding and establishing a successful business is long. It is possible that the effects of entrepreneurship training will only be apparent years after the training is completed. As the long-term impact is difficult to assess in the time available, the evaluation focuses on an assessment of changes in the target group (outcome), which favour a strengthening of entrepreneurship in the long term. The participant survey aims to highlight these direct effects, and is therefore an important element of the evaluation.

The Theory of Planned Behaviour (TPB) serves as a theoretical foundation for the participant survey. The TPB is the most prominent model in social psychology to analyse factors that influence entrepreneurial behaviour. The corresponding survey results allow predictions to be made regarding participants’ future behaviour.¹ The TPB framework has therefore been added to the impact model used for the evaluation.

The TPB is based on the premise that all behaviour is driven by a certain intention. According to TPB, an individual’s intention is influenced by three factors: attitude, subjective norm and perceived behavioural control.

- Attitude refers to an individual’s own perception and evaluation of certain behaviour. This includes their own evaluation of how worthwhile and valuable this behaviour is.
- Subjective norm, on the other hand, focuses on social factors, such as social pressure or the support of others (e.g. friends, family, teachers).

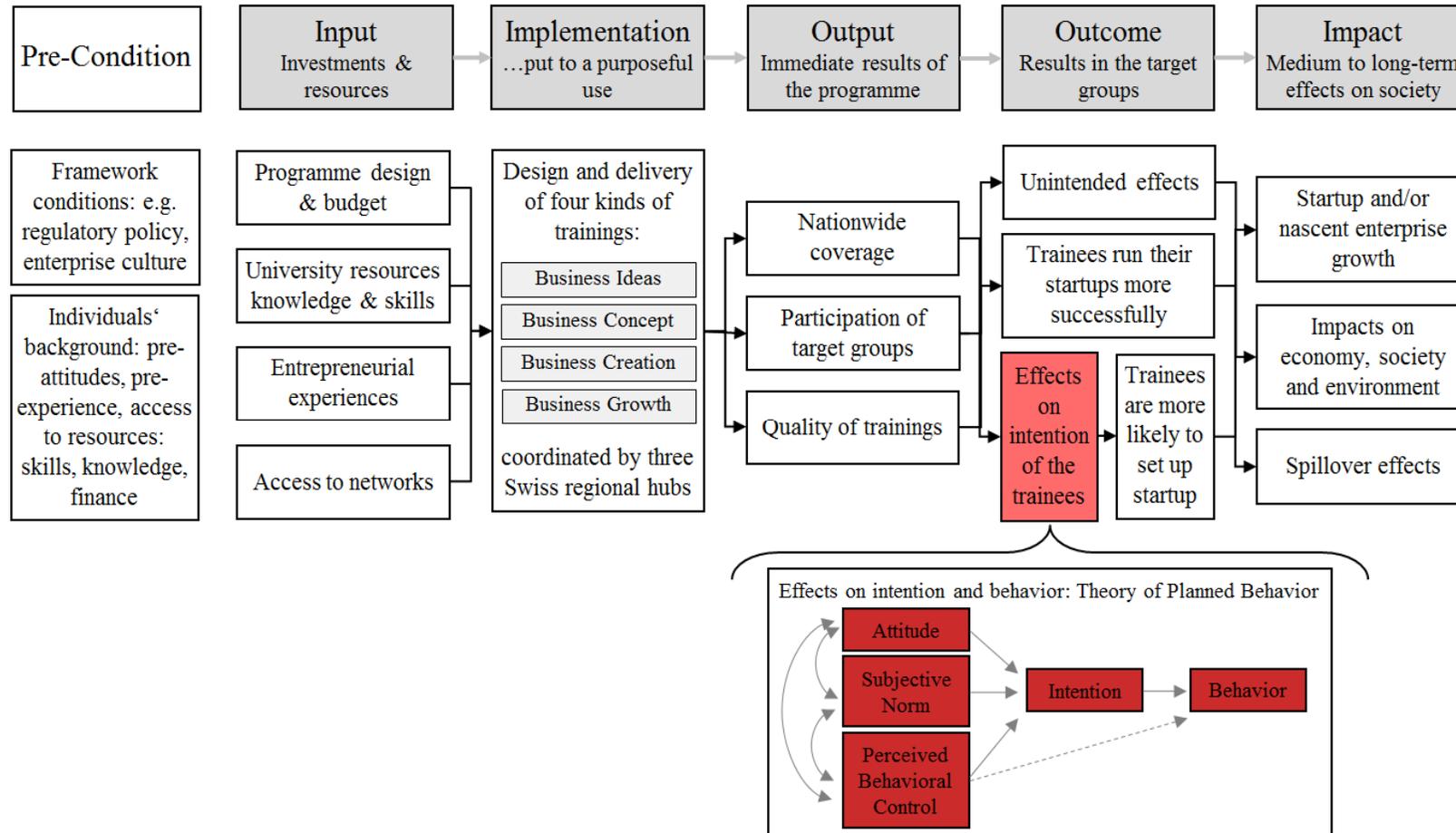
¹ E.g. Ajzen 1991; Liñán and Fayolle 2015; Lortie and Castogiovanni 2015

- Perceived behavioural control refers to the individual's perceived ease or difficulty of performing the particular behaviour. Perceived behavioural control can be enhanced through education and training.

These three factors together can either strengthen or weaken an individual's intention to show a particular behaviour. In addition, the TPB assumes that perceived behavioural control has an effect on the step from intention to the actual behaviour. An intention usually only leads to a particular behaviour if the perceived behavioural control for that behaviour is high. For example, a person who has a strong desire to set up a technology company would only take the step in practice if they considered they had the necessary skills at a sufficient level. Of the three factors that influence the intention, perceived behavioural control is therefore the only aspect that directly influences the implementation of the intention to an actual behaviour.

According to this theory, in order to help promote entrepreneurship, a programme must have an impact on the three factors that influence intention. If it successfully influences these factors to bring about shifts in favour of entrepreneurship, entrepreneurial intention is strengthened. This effect on the intention in turn results in a behaviour that is conducive to setting up a company. Observable (or ascertainable) changes in the areas of attitude, social norm, perceived behavioural control and intention can therefore lead to changes with regard to future entrepreneurial behaviour.

Figure 1: Impact model including TPB



2.4. Survey content

In order to analyse the effects of CTI Entrepreneurship courses, all aspects of TPB are covered in the participant survey. It includes questions that examine the development of the influencing factors (attitude, subjective norm, perceived behavioural control) and others that aim to capture changes in entrepreneurial intention.

For example:

- Attitude: “Starting/running a business is...” with answer categories from “good for me” to “bad for me”.
- Subjective norm: “Do you perceive support for your entrepreneurial initiatives in your close environment?” (Answers differentiated by: family, friends, colleagues, entrepreneurial peers).
- Perceived behavioural control: “If I tried to set up a company, I would have a high probability of succeeding”.
- Entrepreneurial intention: “Likelihood of incorporating registering a company within the next 2 years”.

Furthermore, the survey looks at the performance of participants’ start-ups during the period under review, which allows conclusions to be drawn on the initial effects on behaviour. Other topics covered in the survey are participants’ characteristics (e.g. education, previous entrepreneurial experience), as well as satisfaction with the course content and organisation. At certain points, the survey is supplemented with information already collected when participants registered for the relevant course (e.g. age and sex).

The following table shows which topics are addressed at which stages.

Table 1: Topics covered in the survey, by questionnaire

Topics	QI	QII	QIII
Participants’ characteristics			
Attitude			
Subjective norm			
Perceived behavioural control			
Intention			
Start-ups: employees, turnover and expectations			
Satisfaction with the course			

The initial survey results are presented in Chapter 4 below.

2.5. Control group survey

In addition to the participant survey, a control group survey is also being conducted for module 2 'Business Concept'. The control group survey has two objectives:

- to investigate the awareness of CTI Entrepreneurship courses among the target group;
- to analyse/validate potential correlations between course attendance and the changes gauged in participants.

Regarding the second point above: the control group survey will look at whether the changes relating to TPB factors between the beginning and end of the course can be attributed to the training, or whether such changes are usual among the target group in the relevant time period. Students and members of universities will therefore be asked identical questions to participants, also at 3-month intervals. The control group surveys will be carried out in the first and second quarters of 2017 and therefore in parallel to the module 2 participant survey. The results of the control group survey will be addressed in the monitoring report in September 2017.

The control group survey will be carried out at two universities: the ETH Zurich and the HEID in Yverdon. The survey was started in the spring and the results will be available in the next monitoring report.

3. Courses, participants and response rate

3.1. Courses executed

Since the survey was launched in spring 2016, a total of 55 CTI Entrepreneurship courses (modules 2, 3 and 4) have been executed (a total of 56 courses were run in 2016). Courses were also run in Ticino, but they are not included in the survey.

Table 2 below shows how many courses took place at which locations (broken down into modules).

Table 2: Courses executed

	West					East			Central				Total
	VD*	NE	GE	FR	VS	ZH	WT	SG	BS	BE**	LU	BG	
Module 2	4	1	1	1	1	7	1	1	-	2	1	1	21
Module 3	4	1	2	-	-	8	2	2	1	1	1	1	23
Module 4	3	-	1	-	-	3	2	-	1	1	-	-	11
Total	11	2	4	1	1	18	5	3	2	4	2	2	55

Source: Information provided by consortia via Podio

*VD: Lausanne and Yverdon NE: Neuchâtel,, GE: Geneva, FR: Fribourg, VS: Valais, ZH: Zurich, WT: Winterthur, BS: Basel, ** BE: Bern und Biel, LU: Lucerne, BG: Brugg-Windisch,

3.2. Course participants

A total of 1,035 people participated in these courses² (see Table 3). All participants were invited to take part in the survey.

² In some cases, there may be marginal differences between the participant data in this monitoring report and the information in the CTI Activity Report. The data in the monitoring report are based on the information that B,S,S. received from the consortia via Podio.

Table 3: Number of course participants

	West					East			Central				Total
	VD*	NE	GE	FR	VS	ZH	WT	SG	BS	BE**	LU	BG	
Module 2	141	25	32	30	32	180	20	16	-	59	18	25	578
Module 3	68	17	34	-	-	102	27	26	15	17	18	14	338
Module 4	42	-	14	-	-	24	8	7	13	11	-	-	119
Total	251	42	80	30	32	306	55	49	28	87	36	39	1'035

Source: Information provided by consortia via Podio

*VD: Lausanne and Yverdon NE: Neuchâtel,, GE: Geneva, FR: Fribourg, VS: Valais, ZH: Zurich, WT: Winterthur, BS: Basel, **BE: Bern und Biel, LU: Lucerne, BG: Brugg-Windisch,

Table 4 shows the average age of course participants, their sex and their educational background. Unsurprisingly, the basic modules (module 2) are attended by younger people, whereas the participants in module 4 are the oldest. It is interesting to note that the majority of participants in module 2 are students or graduates from Swiss universities, whereas they only make up one third of course participants in subsequent modules.

Table 4: Characteristics of course participants

	Course Participants	Age (Ø)	female	Education					
				Student (Uni.)	Student (UAS)	Graduate (Uni.)	Graduate (UAS)	Foreign educ.	Other
Module 2	578	29	30%	27%	22%	33%	10%	4%	4%
Module 3	338	35	26%	6%	10%	31%	24%	13%	16%
Module 4	119	39	13%	-	-	36%	35%	15%	14%

Source: Information provided by consortia via Podio

3.3. Response rate

The survey response rate is between 46% and 73%, depending on the module and questionnaire (QI, QII or QIII) (see Table 5). For an online survey, these figures are excellent. It is particularly pleasing that around half of course participants even took part in the third questionnaire (QIII), in other words six months after the end of the course. This good response rate is due to the commitment of course participants: their willingness to participate reflects their affinity with CTI Entrepre-

neurship. The high response rate is also down to course providers who invited participants to complete questionnaires and gave them time to do so during the courses³. Because QIII was only sent out six months after the end of the course, fewer people have received it.

For some of the evaluations presented in Chapter 4, the analysis must be limited to individuals who have completed the first and second questionnaires. Table 6 therefore shows how many course participants have completed the first and second questionnaires and how many have completed all three questionnaires.

Table 5: Survey response rate I

	Q I		Q II		Q III	
	Total	in %	Total	in %	Total	in %
Module 2	422	73%	336	58%	104	46%
Module 3	233	69%	209	63%	89	51%
Module 4	75	69%*	68	63%	26	49%
Total	730	71%	613	60%	215	49%

Source: Information provided by consortia via Podio and participant survey

“Total”: Number of students who filled in the questionnaire

“%”: Response rate with respect to the number of respective questionnaires sent out.

* Students contacted: 85. As part of the students' contact details were delivered to B,S,S. after the deadline for Questionnaire I, 11 out of 14 participants in Western Switzerland did not receive the invitation for Q I.

³ Technical notes: a) course participants who abandoned a course and then continued at a later date (on a later course), are assigned to the second and not the first course. b) B,S,S. did not have valid email addresses for a very small number of participants (three in the current reporting period). There was a link to the survey available for participants who did not receive an email invitation for any reason, but nobody has made use of this option to date. c) There was an error in the data transfer for one course, which is why the response figures for module 4 Q1 are very low.

Table 6: Survey response rate 2

	Q I \cap Q II		Q I \cap Q II \cap Q III	
	Total	in %	Total	in %
Module 2	304	53%	77	34%
Module 3	178	53%	69	40%
Module 4	49	45%	12	27%
Total	531	52%	158	36%

Source: Information provided by consortia via Podio and participant survey

“Total”: Number of students who filled in the questionnaire

“%”: Percentage of students who filled in questionnaires I and II in the first column and I, II and III in the second column (whereby we calculate the response rate based on the numbers of students who received questionnaires I and II / I, II and III)

For the following analyses, we state where relevant if the answers are from QI, QII or QIII, or only from participants who completed QI, QII and QIII in parallel (notation: $QI \cap QII / QI \cap QII \cap QIII$). Furthermore, for some questions, course participants answered QII or QIII but not QI, and our online survey tool re-submitted the questions that were not answered in QI in QII.

4. Results

This chapter summarises the results of the survey conducted in 2016. The answers to all questions are broken down by consortium and module in the tables in the appendix.

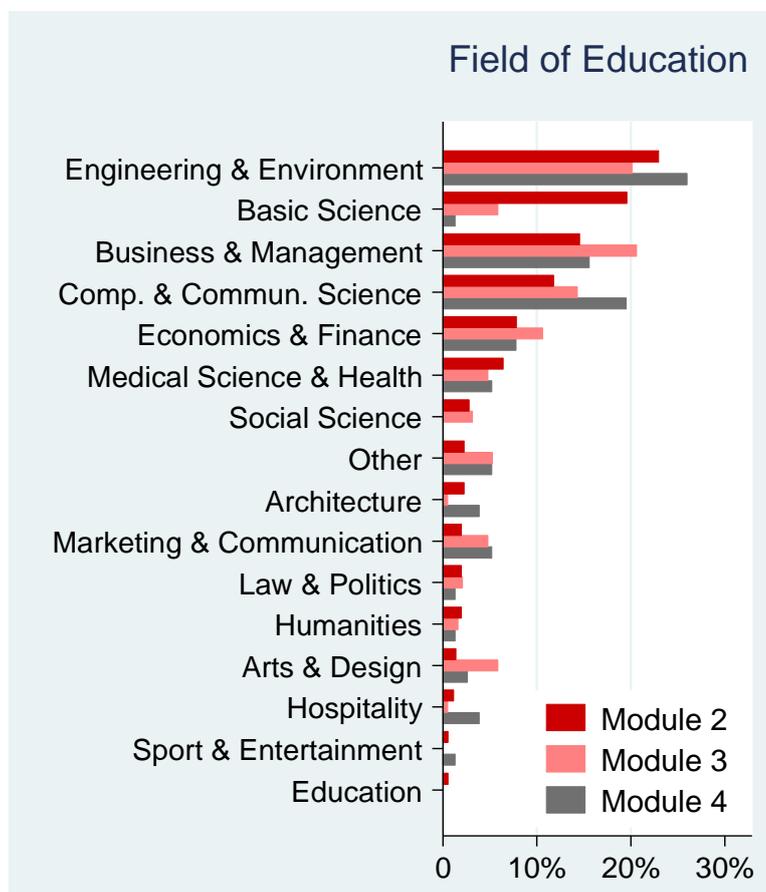
4.1. Educational background of course participants

The survey collects detailed data on participants' educational background. Figure 2 shows the percentage breakdown of the different subject areas by module. The exact figures are also listed in Table 7.

Some interesting results include:

- ***20-25% of course participants are from the field of engineering and environment. The percentage of participants from this subject area is about the same across all modules.***
- Just under 20% of participants in module 2 are students and graduates of basic sciences. In module 3 this subject area makes up around 5% of course participants, while in module 4 there are virtually no course participants from this subject area.
- In module 4, 20% of course participants are from the subject area of business and management, but this subject is less well represented in modules 2 and 3. The share of participants with a business and management background therefore increases the more concrete the start-up/first growth phase of the business.
- Just over 10% of participants from module 2 have a background in computing and communication sciences, while in modules 3 and 4 this percentage rises to just under 20%.

Figure 2: Participants' educational background



Share of course participants with the respective educational background in per cent, by module.

Source: Participant survey, QI, QII and QIII (those who did not complete QI get asked the same question again in QII/QIII)

Table 7: Participants' educational background

Main field of education	Module 2	Module 3	Module 4
Engineering & environment	23%	20%	26%
Basic science (mathematics, physics, biology, etc.)	20%	6%	1%
Business & management	15%	21%	16%
Computer & comm. science (tech, system, telecoms, etc.)	12%	14%	19%
Economics & finance	8%	11%	8%
Medical science & health (medicine, pharma, etc.)	6%	5%	5%
Social science (geography, psychology, sociology, etc.)	3%	3%	0%
Other	2%	5%	5%
Architecture	2%	1%	4%
Marketing & comm. (marketing, journalism, media, etc.)	2%	5%	5%
Law & politics (law, political science, public admin., etc.)	2%	2%	1%
Humanities (history, philosophy, languages, etc.)	2%	2%	1%
Arts & design (photography, web design, art, etc.)	1%	6%	3%
Hospitality	1%	1%	4%
Sport & entertainment (music, dance, theatre, etc.)	1%	0%	1%
Education	1%	0%	0%

Share of course participants with the respective educational background in per cent, by module.

Source: Participant survey, QI, QII and QIII (those who did not complete QI get asked the same questions again in QII/QIII)

4.2. Satisfaction with the courses and suggestions for improvement

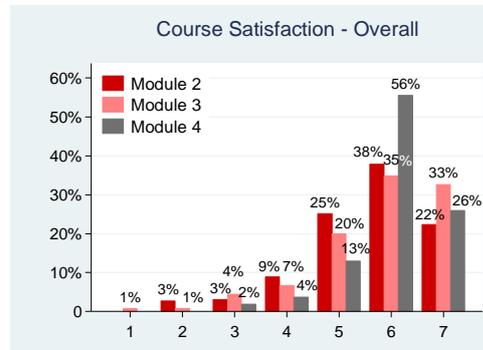
Participants' satisfaction with courses is high overall (see Figure 3). This is true for all modules. The survey covers the following:

- Overall satisfaction with the course
- Quality of teaching
- Usefulness of the module

Figure 3: Course satisfaction by module



Figure 4: Course satisfaction – distribution



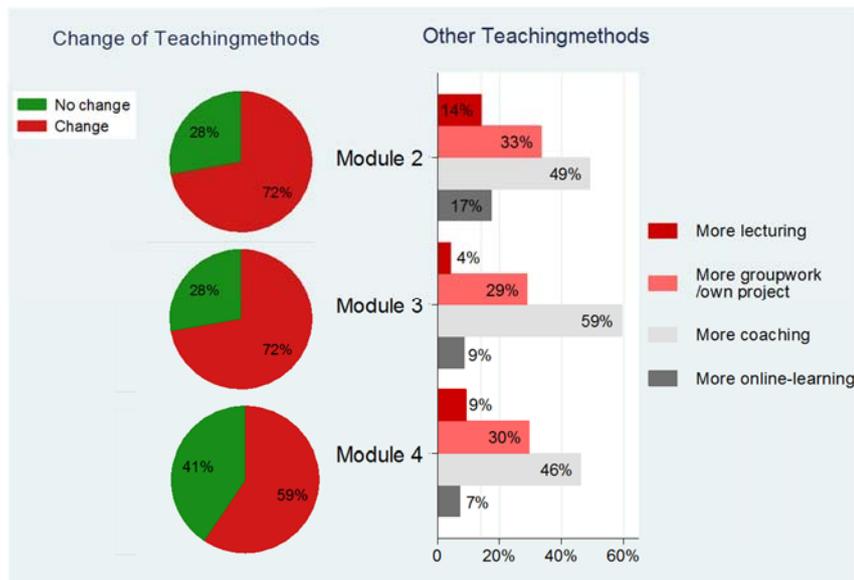
Source: Participant survey

Scale: 1: “completely dissatisfied”, 7: “completely satisfied”

Generally speaking, the various satisfaction indicators are very similar across all modules (Figure 3). In addition, the results differ only slightly between the consortia (not depicted in a chart). Figure 4 also shows the percentage breakdown of one of the satisfaction indicators (overall satisfaction). We can see that the vast majority of participants gave satisfaction ratings in the upper range (between 4 and 7).

In addition, the survey looked at whether participants would be keen to see changes to teaching methods. Those who said they would like to see changes were then asked to state which. ***The results show that many participants would be keen to see more group work, more work on own projects and more coaching.***

Figure 5: Wanting to have different teaching methods



Source: Participant survey

Pie charts: yes/no: share of course participants. Bar charts: different teaching methods favoured by percentage of course participants, where more than one option could be selected (the columns therefore add up to more than 100%)

4.3. Finding business partners

An important goal of CTI Entrepreneurship is networking. One specific aspect of this networking is the opportunity to find a business partner through participation in a course. In QI participants are asked whether they are looking for a business partner and in QII whether they found one in the course of the module. The analysis of the answers to this question shown in Figures 6 and 7 shows the percentage of participants who found a potential or actual business partner, and differentiates between those who stated they were looking for a business partner at the beginning of the course and those who were not.

The specific questions were:

Q I: Are you currently searching for a business partner to set up a company?

Q II: Did you meet someone in the CTI module who might become your business partner or is now your business partner?

The results are encouraging. *Some 40% of participants in module 2 stated that they were looking for a business partner at the beginning of the course, and of those, more than half had found an actual business partner by the end of the module.* In addition, some 45% of those who were not looking for a business partner also found one. In module 3, on the other hand, around 40% of participants were also looking

for a business partner, but only just under a quarter of these people actually met one through the course. The results for module 4 are not shown as the number of cases for this question is too low.

Figure 6: Business partner – module 2

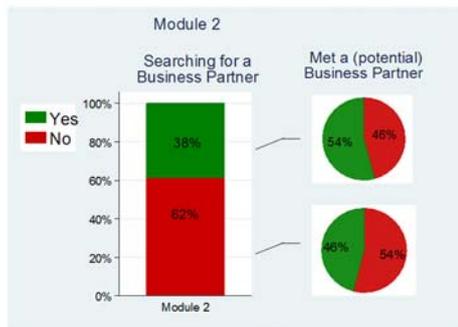
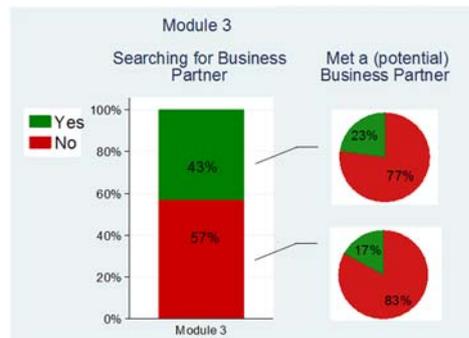


Figure 7: Business partner – module 3



Source: Participant survey, first question from QI, second question from QII. (those who did not complete QII are asked the question again in QIII)
Bar chart: share of module participants. Pie chart: Share of respective subsample.

4.4. TBP factors

The following section presents the results relating to factors that are important to start-up behaviour according to the Theory of Planned Behaviour (TPB), namely attitude, subjective norm, perceived behavioural control and intention.

4.4.1. Attitude and subjective norm

By asking different, slightly nuanced questions, the survey gauges the attitude of course participants to entrepreneurship and to the idea of setting up their own business. In the following chart (Figure 8) we take an average of the answers to the various questions. The possible answers are defined as opposite pairs, i.e.:

1: Setting up or managing a company is associated with negative attributes ('disappointing', 'bad for me', 'worthless', 'negative', 'harmful')

7: Setting up or managing a company is associated with positive attributes ('rewarding', 'good for me', 'worthwhile', 'positive', 'helpful')

We also ask whether course participants feel their social circle supports their idea of starting a business. The question is: "Do you feel those around you support your entrepreneurial activities?" The results are shown in Figure 9. We do not ask this question in QII for modules 3 and 4 as these courses only last a few days and it is unlikely that social support changes significantly during this time.

Figure 8: Attitude - motivation to become an entrepreneur

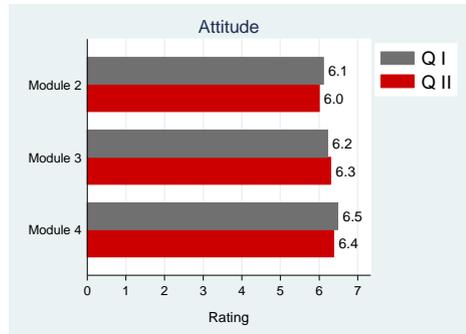
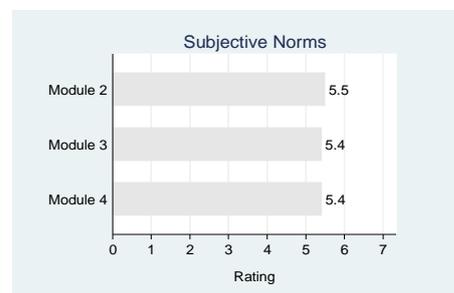
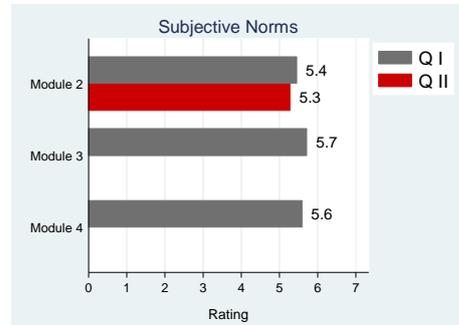


Figure 9: Subjective norm - social support to start a business



Source: Participant survey

First row: Students who participated in both QI & QII combined are analysed, whereas due to a lower response rate for QIII, all answers to QIII are taken into consideration (second row), whether or not QI & QII was answered.

Scale for Figure 8:

1: negative ('disappointing', 'bad for me', 'worthless', 'negative', 'harmful'),

7: positive ('rewarding', 'good for me', 'worthwhile', 'positive', 'helpful')

Scale for Figure 9:

1: fully disagree, 7: fully agree

The questions on social norm are not asked in QII for modules 3 and 4, as the time between the beginning of the course and its termination is too short to expect a difference from this perspective.

The results reveal that **participants are highly motivated to start a business in the future**. This motivation barely changes throughout the course. In module 2, course participation appears to result in a (very small) decline in this motivation. This may indicate that for some people the course is a reality check whereby some very optimistic expectations of life as an entrepreneur may be put into perspective as participants also become increasingly aware of the challenges associated with starting a

business. The decline in motivation may potentially also be due to the fact that students are closer to finishing their degrees and the need to earn a living becomes a higher priority for some⁴.

In modules 3 and 4 where participants have already got to grips with the idea of starting a business, the attitude values are more or less the same before and after the course. While there was minimal increase in module 3, there was a minimal decline in module 4. The results concerning subjective norm mean that generally speaking, course participants feel their social circle supports their entrepreneurial activities. Participants in module 3 feel they have the strongest support. As part of the more detailed analyses in the scope of the evaluation which will be published in the first half of 2018, we will further analyse how attitude and subjective norm impact start-up activity.

Six months after the end of the course, the values for attitude and subjective norm are more or less unchanged.

4.4.2. Perceived behavioural control

Self-assessment of basic relevant competencies before and after the course

Before and after participating in the course, respondents are asked to assess their own competencies that are useful or necessary to successfully set up a business. Respondents are provided with the following statements:

⁴ This result may be down to coincidence. If appropriate, we will include confidence intervals in the more detailed analyses within the scope of the evaluation report, as we will also have higher case numbers by then. It will be interesting to continue to observe the question of changes in motivation in future surveys and to also take into account the results of the control group survey.

- I am comfortable making decisions involving uncertainty and risk.
- I believe my start-up has a high probability of success.
- I feel capable of sacrificing the necessary time and energy to my project.
- I expect to have success during my future entrepreneurial career (only in modules 3 and 4).

Table 8: Perceived behavioural control - fundamental capabilities

	Module 2			Module 3			Module 4		
	Q I	Q II	Q III*	Q I	Q II	Q III*	Q I	Q II	Q III*
Decisions involving uncertainty and risk	4.5	5.1	5.5	5.3	5.1	5.2	5.3	5.5	5.6
Probability of success	4.2	4.9	5.0	5.1	5.3	5.5	5.2	5.6	5.4
Sacrifice time and energy	5.6	5.5	5.8	6.0	5.8	5.7	6.0	6.1	5.7
Expected entrepreneurial success	-			5.1	6.0	6.0	5.9	6.2	6.1

Scale: 1: fully disagree, 7: fully agree

* Students who participated in both Q I & Q II combined are analysed, whereas due to a lower response rate for Q III, all answers to Q III are taken into consideration, whether or not Q I & Q II was answered.

Source: Participant survey

Course participants rate their own fundamental competencies that are relevant to starting a business relatively positively before the course; after the course they rate the relevant skills more positively in most cases, or at least as highly as before the course. This means that generally speaking, the course helps participants acquire the general skills needed to set up a business. Six months later, the figures are similar. It is noteworthy, however, that the figures for module 2 participants six months after the course are slightly higher. This may be due to selection bias, as presumably the more motivated participants are more likely to fill out the questionnaire six months after the end of the course.

Self-assessment of technical competencies before and after the course

In the context of rating their own competencies, participants are asked in Q I how they would rate their competence in numerous fields that are taught in the corresponding CTI course modules. After the course we then ask respondents whether they have learned anything from the respective course content. We purposely do not ask participants to rate their own competencies a second time in Q II as it is entirely conceivable that participants become aware of the gaps in their own knowledge by participating in the course. It is therefore possible that a participant who considered

herself to have a good knowledge of marketing before the course, learned a great deal about marketing on the course and is therefore more competent after the course, but owing to this greater real competence, would rate her own marketing competency lower than before the course. In order to avoid these results, which are difficult to interpret, we ask:

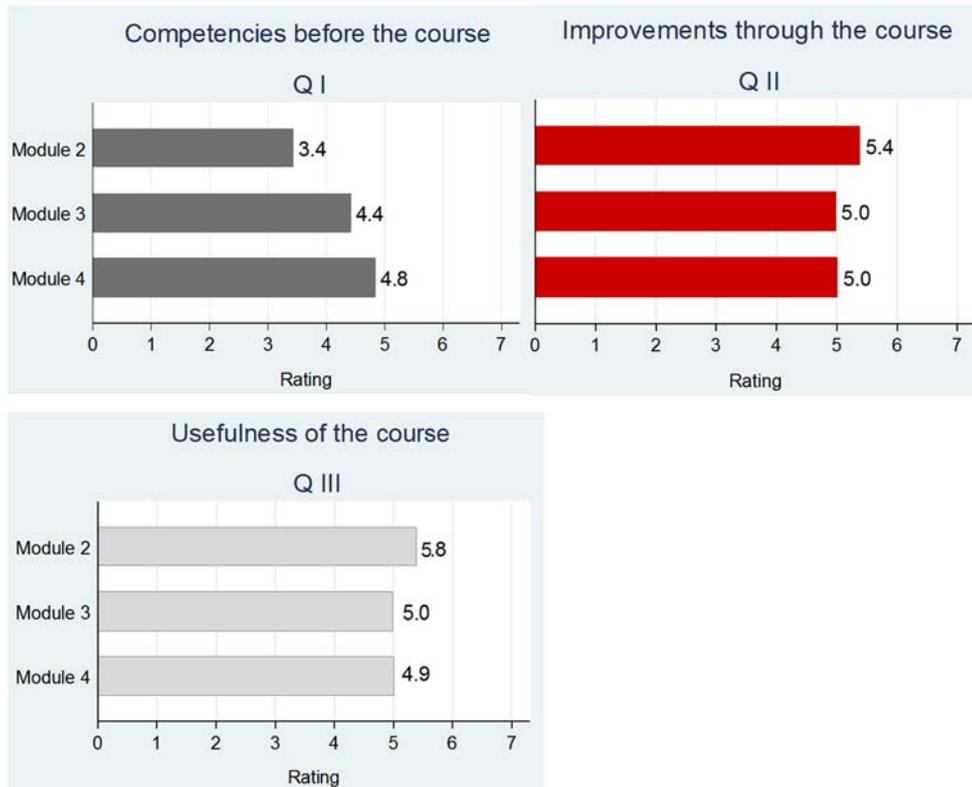
- Before the course (Q I): rating of competency.
- Directly after the course (QII): increase in competency through participation in course.
- In QIII: How useful was the knowledge acquired to business activities?

We present the results of QI, QII and QIII side by side (in contrast to the previous charts) as the questions asked in QI, QII and QIII are not the same and it therefore does not make sense to compare the results of QI-QIII directly.

Figure 10 shows the average answers to the questions on competencies, and Table 14 in Appendix 2 presents the results on the individual competencies. In QI we asked participants to rate sentences such as “I can do financial planning” with the answer categories 1-7. QII then included statements such as “Thanks to the course I can do financial planning better”, which respondents were asked to rate on a scale from 1 to 7.

In QIII participants were then asked what sort of activities such as “Developing a promising growth strategy” they had carried out since the end of the course. The next question then asked how useful the knowledge acquired through the course was for performing these activities.

Figure 10: Technical competencies



Technical Competencies: before the course, improvements and usefulness

Source: Participant survey

First row: Students who participated in both QI & QII combined are analysed, whereas due to a lower response rate for QIII, all answers to QIII are taken into consideration, (second row) whether or not QI & QII was answered.

Scale: 1: 'fully disagree', 7: 'fully agree'

The participants in module 2 do not rate their technical competencies necessary for setting up a company very highly before the course. According to their self-assessment, the course helped them significantly improve their competencies. Participants in modules 3 and 4 rate their competencies higher before the course but also state that they learned something from the course (even though these figures are lower than for module 2). Participants in module 4 rate their prior knowledge highest and the additional knowledge gained lowest. Participants generally rate the usefulness of what they learned very highly.

Of particular interest concerning these questions are the differences between the different topic areas. The chart (see Figure 11 in Appendix 2) shows that no participants

of any course believe they learned very little. There are differences between the various courses, however. An analysis of the evaluations of the different courses could potentially help in adapting course content.

4.4.3. Intention

Finally we ask participants if they plan to set up a business in the near future. At the beginning (QI) we ask whether they intend to set up the company in 2 years. After the course we then ask basically the same question, but in module 2 we ask whether the company should be set up in 1.5 years, as the second questionnaire during module 2 is filled out around half a year after the first. In QIII once again we ask whether participants plan to set up a business within the next year, as there is half a year between QII and QIII so the planned company foundation should have moved forward by half a year. Only those who have yet to set up a company are asked the question about plans to set up a business. In module 4 the question is not asked at all as participants in module 4 usually already have their own companies.

Table 9: Intention to set up a business

Likelihood of incorporating / registering a company				
Module 2				
	Q I (..next 2 years)	Q II (..next 1.5 years)	Q III* (..next year)	<i>Difference QI - QIII</i>
	4.8	4.5	3.7	-1.1
<i>Responses</i>	207	207	85	
Module 3				
	Q I (..next 2 years)	Q II (..next 2 years)	Q III* (..next 1.5 years)	<i>Difference QI - QIII</i>
	6.0	6.2	5.2	-0.8
<i>Responses</i>	63	63	57	

* Students who participated in both QI & QII combined are analysed, whereas due to a lower response rate for QIII, all answers are taken into consideration, whether or not QI & QII was answered.

Source: Participant survey

Scale: 1 (very unlikely) to 7 (very likely)

The fact that more participants in module 3 plan to set up a company is to be expected. However, it is noteworthy that participation in the course in module 2 causes participants' intention to set up a business to fall by 0.3 on the 1-7 scale. This can

be interpreted in a similar way to the results on attitudes: the course may lead some participants to consider starting a business in a more realistic manner and therefore possibly with more scepticism. This should be regarded as a positive result as it makes sense not only to encourage future entrepreneurs to take the step and set up a business, but also to help ensure that where possible promising business ideas are pursued and less promising ones are not.

Between QII and QIII the values relating to setting up a business fall significantly. This appears realistic in that 1.5 years before the date of setting up a business specified by us there is likely to be a certain optimism that a business can be successfully set up in this period. However, six months later, some course participants realise they are not much closer to starting a business (e.g. many necessary steps have yet to be initiated) and they will therefore have to ‘admit’ that in 12 months’ time, they may still not have set up a business.

4.5. Jobs, clients, revenues and expected turnover

Finally, we survey a number of aspects that can be allocated to outcome or impact in the impact model: the number of employees and the turnover of start-ups founded by course participants. The answers to these questions should certainly not be interpreted causally: if certain companies already have their first clients, this does not mean that the success can be attributed to CTI Entrepreneurship. However, the results also show that some course participants certainly achieve business success. And once we have the survey results in Q3, we will also be able to present the evolution over time.

Specifically, we ask participants:

- Have you acquired your first clients?
- Have you achieved revenues of more than CHF 300,000/year?

Table 10 shows how many participants answered “yes” to these questions. A technical note: we only asked the question about initial clients and revenues in QII for module 2 as we did not want to ask this question before the start of the course. The results show *that 99 course participants work at start-ups that already have their first clients, and 36 participants report annual revenues of over CHF 300,000.*

Table 10: First clients and annual revenue

	Responses Q I/II*		Responses Q III	
	First clients	Revenue 300 K +	First clients	Revenue 300 K +
Module 2*	6	1	<i>Not yet available (low response rate)</i>	
Module 3	34	2		
Module 4	59	33		
Total	99	36		

* Participants in modules 3 and 4, this question were asked in QI, participants in module 2 in QII.

Source: Participant survey

Table 11 shows: **99 CTI Entrepreneurship participants work at start-ups that already employ staff (on average around 6 employees per company).**

Table 11: Employees

	Responses	Q I / II*	Q III
	Total	N° Employees (Ø)	N° Employees (Ø)
Module 2*	8	5	<i>Not yet available (low response rate)</i>
Module 3	58	2.4	
Module 4	69	8.2	
Total	135	5.6	

* For Module 2: Questions are asked at QII

Source: Participant survey

At this point, we should highlight that we are unfortunately unable to extrapolate from these figures the total number of employees working in the relevant companies. This is because we do not know how many course participants work at the same company. If we were to add up the data from all participants, we would presumably count many of the start-ups twice.

Finally, course participants are asked about their revenue expectations. The corresponding question is “How much revenue are you expecting to generate in 2 years?” It is interesting how expectations change during the course. This is particularly relevant to module 4 as developing growth strategies is the aim of this module.

Table 12: Expected annual revenue (2 years later)

	Q I* Responses	Q I* Expected Revenue (Ø)	Q II Responses	Q II Expected Revenue (Ø)	Q III Responses	Q III Expected Revenue (Ø)
Module 2*	-	-	5	284,000	<i>Not yet available.</i>	
Module 3	42	619,000	36	833,000		
Module 4	52	1,889,000	49	2,610,000		

* For module 2: Questions are asked at QII

Analysis only if students answered the question at both points in time (QI and QII).

Source: Participant survey

Appendix

A1: Competencies: self-assessment before the course and data on knowledge gained

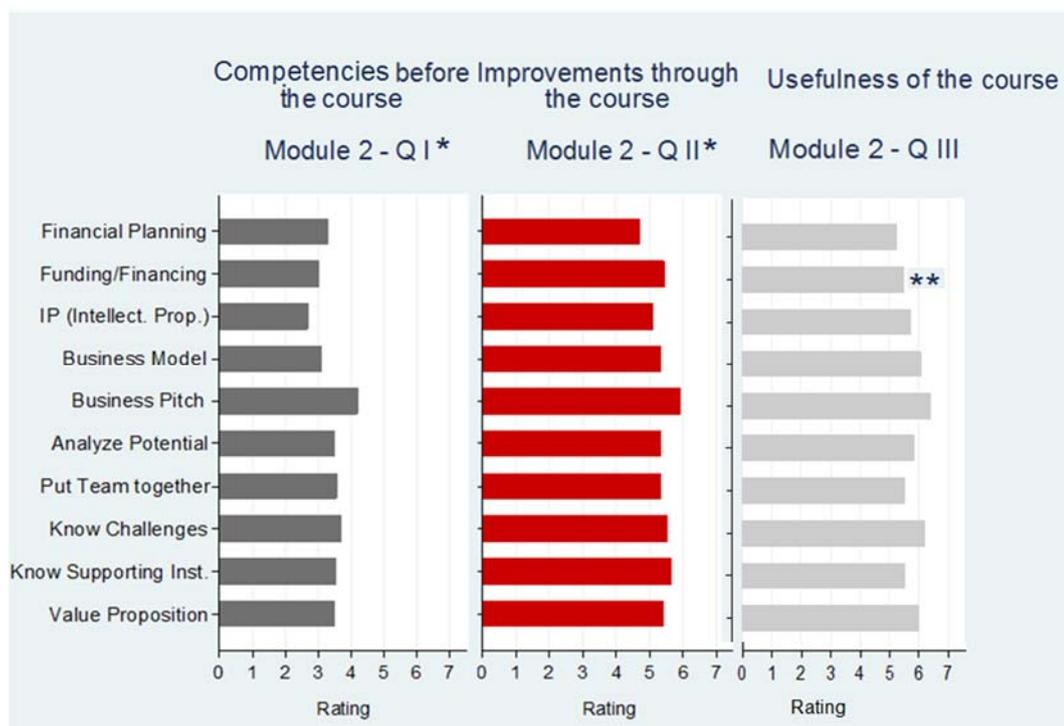
The following charts (Table 14 and Figure 11) show how participants rate the relevant competency before the course and how highly they rate the learning effect achieved through the course. The charts are preceded by a table explaining the abbreviations used in the charts. The detailed results are presented in tables at the end of the Appendix.

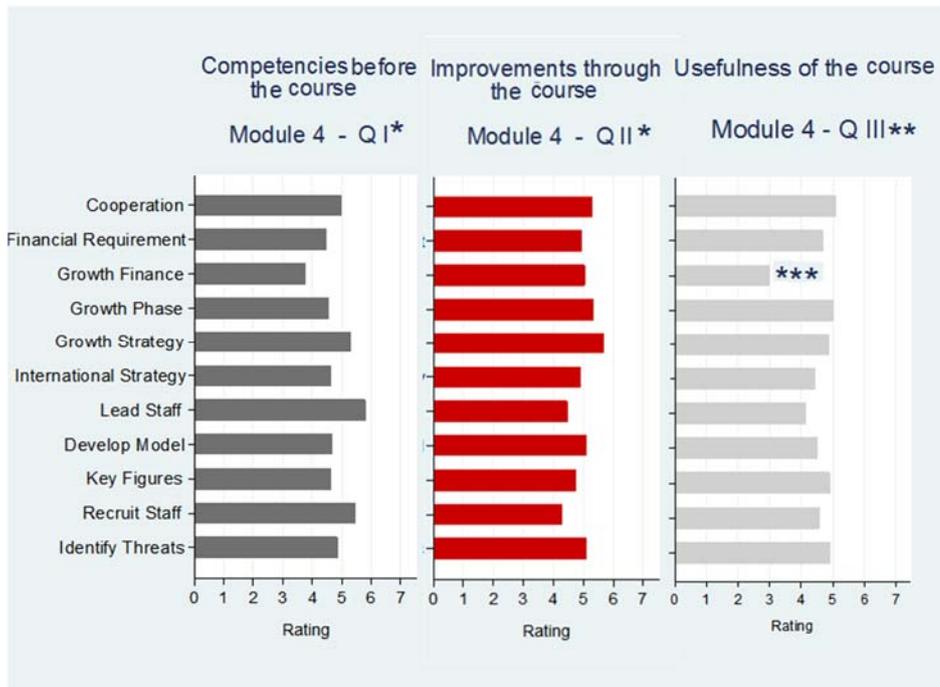
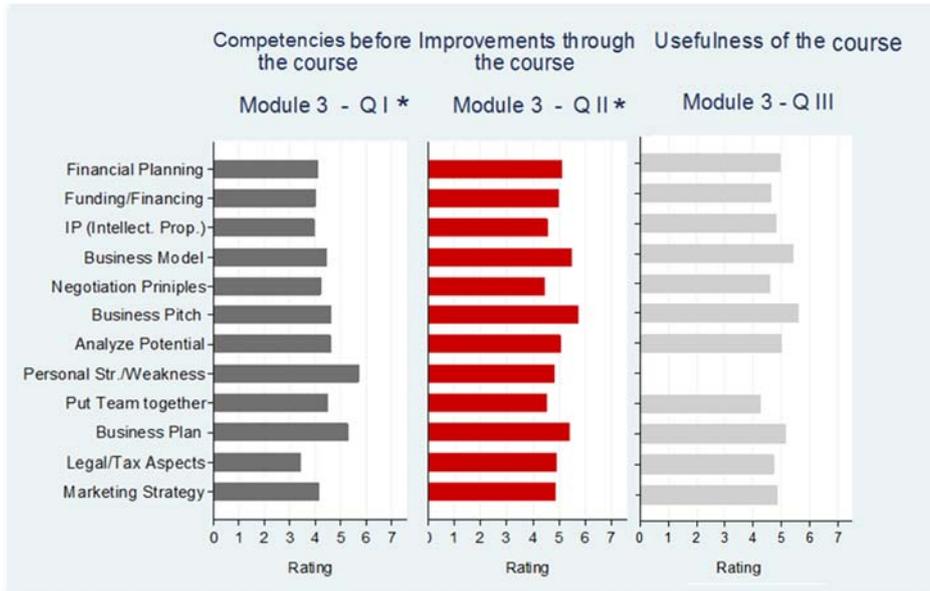
Table 13: List of abbreviations / Explanations for Figure 11

Module 2	
Financial planning	I can do financial planning.
Funding/financing	I know how to take first steps towards funding / financing.
IP (Intellect. Prop.)	I consider my knowledge on the protection of intellectual property (e.g. via patents, or copyright) as sufficient.
Business model	I know how to develop a promising business model.
Business pitch	I consider myself well equipped to perform a business pitch.
Analyse potential	I consider myself well prepared to analyse the market potential for a product / service.
Put team together	I know how to put together a good start-up team.
Know challenges	I know the most important challenges of a start-up entrepreneur.
Know supporting inst.	I know the institutions offering help to found a start-up company.
Value proposition	I consider myself well equipped to define a value proposition.
Module 3	
Financial planning	I can do financial planning.
Funding/financing	I know how to take first steps towards funding / financing.
IP (Intellect. Prop.)	I consider my knowledge on the protection of intellectual property (e.g. via patents, or copyright) as sufficient.
Business model	I know how to develop a promising business model.
Negotiation principles	I know the key principles of negotiation.
Business pitch	I consider myself well equipped to perform a business pitch.
Analyse potential	I consider myself well prepared to analyse the market potential for a product / service.
Personal str./weakness	I know my personal strengths / weaknesses and how to successfully work in a team.
Put team together	I know how to put together a good start-up team.
Business plan	I understand the concept of a business plan.
Legal/tax aspects	I know the basic legal and tax aspects for starting a business.
Marketing strategy	I know how to design and implement a marketing strategy.

Module 4	
Cooperation	I consider myself competent to pave the way for business cooperation and develop them successfully.
Financial requirement	I know how to determine the financing requirement for the growth of my company.
Growth finance	I feel able to acquire growth finance.
Growth phase	I understand the typical growth phases that a company goes through.
Growth strategy	I consider myself able to develop a promising growth strategy.
International strategy	I consider myself able to develop an international strategy.
Lead staff	I am able to lead staff members.
Develop model	I know how to develop a scalable business model.
Key figures	I understand business key figures and am able to interpret them.
Recruit staff	I feel able to recruit staff members.
Identify threats	I know how to identify potential threats for my business in time.

Figure 11: Technical competencies, by topic and module





Source: Participant Survey, QI, QII and QIII

Scale: 1: “fully agree”, 7: “fully disagree”

* Students who participated in both QI (competencies before the course, 1st figure) & QII (improvements through the course, 2nd figure) combined are analysed, whereas due to a lower response rate for QIII (usefulness of the course), all answers of QIII (3rd figure) are taken into consideration, whether or not QI & QII was answered.

** fewer than 20 answers (n<20).

*** based on the answer of 1 participant (n=1).

Table 14: Technical competencies, by topic and module - Table

Module 2 - Topics	Competencies before the course*	Improvements through the course*	Usefulness of the course
	Q I*	Q II*	Q III
Financial planning	3.6	4.8	5.2
Funding/financing	3.3	5.4	5.5**
IP (Intellect. Prop.)	3.0	5.1	5.7
Business model	3.6	5.3	6.0
Business pitch	4.2	5.8	6.4
Analyse potential	3.9	5.2	5.8
Put team together	3.9	5.3	5.5
Know challenges	4.0	5.6	6.2
Know supporting inst.	3.6	5.6	5.5
Value proposition	3.9	5.4	6.0

Module 3 - Topics	Competencies before the course*	Improvements through the course*	Usefulness of the course
	Q I*	Q II*	Q III
Financial planning	4.3	5.0	4.9
Funding/financing	4.1	4.9	4.6
IP (Intellect. Prop.)	3.8	4.2	4.8
Business model	4.5	5.4	5.4
Negotiation principles	4.4	4.5	4.6
Business pitch	4.7	5.7	5.6
Analyse potential	4.6	5.0	5.0
Personal str./weakness	5.8	4.8	-
Put team together	4.5	4.6	4.2
Business plan	5.3	5.3	5.1
Legal/tax aspects	3.5	4.7	4.7
Marketing strategy	4.1	4.9	4.9

Source: Participant survey

Scale: 1: "fully agree", 7: "fully disagree"

* Students who participated in both QI (competences before the course, 2nd column) & QII (improvements through the course, 3rd column) combined are analysed, whereas due to a lower response rate for QIII (usefulness of the course), all answers in QIII (4th column) are taken into consideration, whether or not QI & QII was answered.

Module 4 - Topics	Competencies before the course*	Improvements through the course*	Usefulness of the course**
	Q I*	Q II*	Q III**
Cooperation	5.0	5.2	5.1
Financial requirement	4.4	4.9	4.7
Growth finance	4.1	5.0	3.0***
Growth phase	4.6	5.3	5.0
Growth strategy	5.2	5.5	4.9
International strategy	4.5	4.7	4.4
Lead staff	5.9	4.6	4.1
Develop model	4.7	5.1	4.5
Key figures	5.0	4.8	4.9
Recruit staff	5.4	4.4	4.6
Identify threats	4.9	5.1	4.9

Source: Participant survey

Scale: 1: "fully agree", 7: "fully disagree"

* Students who participated in both QI (competencies before the course, 2nd column) & QII (improvements through the course, 3rd column) combined are analysed, whereas due to a lower response rate for QIII (usefulness of the course), all answers in QIII (4th column) are taken into consideration, whether or not QI & QII was answered.

** fewer than 20 answers (n<20).

*** based on one answer of (n=1).