UNIVERSITY OF AGDER

The Effects of Student Consultancy Programs on Participating Firms

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This master's thesis is carried out as a part of the education at the University of Agder and is therefore approved as a part of this education. However, this does not imply that the University answers for the methods that are used or the conclusions that are drawn.

University of Agder, 2015
School of Business and Law

Acknowledgements

We wish to thank everyone who made time in his or her schedules to assist in the writing of this paper. This has been one of the most interesting projects we have undertaken during our years as students.

We would like to thank all the entrepreneurs who took time from their hectic lives to participate in the survey and supply us with the critical data needed for the analysis. We would also like to thank the University of Agder for the help and resources they have provided.

Elise Rushfeldt and Craig Grocott both have our gratitude for reading trough and providing notes to the draft.

We would also like to thank our families for the advice and moral support during the writing of this thesis. Especially, we should mention: Renate, Qaisra, Tove, Ketil and Ine.

Last but not least, we would like to give a well deserved thanks to our supervisor, Dr. Rotem Shneor. Your help, guidance, and relentless commitment to our paper have helped us far more than we could expect and far more than most supervisors would.

Erik Egeland and Saif Khan
Kristiansand 01.06.2015

Abstract

This paper discusses the effects student-based consultancy programs have on the firms that participate. The research question asks both what effects the firms experience from participating and what causes these effects.

The paper examines this research question through a quantitative analysis of participants in two such programs that have run at the University of Agder for the past 10 years. The findings of the study are that the majority of the participating firms experience both intangible effects and are satisfied with participating in the programs. It also found that one third of the participating firms implemented the recommendations given by the students. Furthermore, this study also looks at recruitment potential and economic effects of the program. For the former, it was found that a small number of students were hired after the program ended, and for the latter, the findings were inconclusive. Lastly, this study points to factors that influence the effects and implications of these types of programs and provides valuable suggestions and insights for further research.

Keywords: Student Consulting, Entrepreneurship, Strategy, Entrepreneurship Education, Strategy Education, Effects of Consulting, Academic Consultancy, Practical Higher Education, Practical Entrepreneurship Education, SME, SME consulting, entrepreneurship consulting.

Forewords

In the fall of 2014, the two authors of this paper sat waiting in anticipation in building 15 at the University of Agder. We had both enrolled at the 7,5 credit course International Laboratory (Int. Lab for short). The course would assign us a company for whom we would develop an international strategy throughout the upcoming semester. For both of us, this was our first hands-on practical course with a real life company. Both of us worked with our companies throughout the semester and would argue that we learned more from this course than we have from any other courses so far in our studies.

At the end of the program, Dr. Rotem Shneor (one of the program coordinators) approached us and asked if we would like to write a master thesis based on this course. We were both delighted and changed our current thesis plans to instead research the effects of student based consultancy programs under the supervision of Dr. Shneor.

The work we had taken on was extensive and the months to follow would provide us with much more challenges than any of us would have expected. Much like international laboratory, writing this thesis has provided us with more learning that most other challenges we have encountered throughout or years at University.

We are thankful for the opportunity and very happy with the results of all our hard work!

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Chapter 1 Introduction

In most countries around the world, small and medium sized enterprises (SME) are quite important to their nations and provide vital contributions to the economy (Kuratko, 2005). SMEs are an important part of the renewal process that pervades and defines market economies. They are also an essential active mechanism by which the masses enter the market economy. By doing so, they allow the average person a chance of achieving economic success and increase their income (op. cit.). In Norway, 99.5% of all companies have less than 100 employees (Regjeringen, 2012). Therefore, an important part of the Norwegian government´s strategy is to help these businesses prosper and grow (Regjeringen, 2012). The Norwegian government recognises that performing any task on a stretched budget is one of the biggest challenges for SMEs in Norway (op. cit.).

An increasing number of universities around the world have in recent decades increased their focus on SMEs through introducing and developing entrepreneurship as an academic field (Wilson, 2008). Consequently, education programs in entrepreneurship have been established in a majority of these universities (Wilson, 2008). Contemporary entrepreneurship courses are largely taught at business schools and are often focused on combining the already existing business courses in a more practical context with focus on SMEs (Pittaway and Cope, 2007). Typically, these practical courses are structured with a focus on student-entrepreneur interactions, often in a consulting or brainstorming context.

There are many variations of management consultancy courses offered through universities. Below are some examples of the different types.

1) *The interdisciplinary team* – composed of upper level bachelor or graduate students who work in teams. Together, they counsel small businesses, which volunteer for the projects, under the supervision of the university faculty. A study by Burr and Solomon (1977) depicts this course arrangement. The programs are meant to help small business management improve their financial performance and accounting procedures and, at the same time, provide practical learning for students and staff members (McDougall, 2014).

2) *Self-sustaining facilities* - run like small consultancy firms, where participating small businesses have client-consultant relationships with the students. The businesses usually pay a

fee for these services. Supervisors aid the student teams with their work in the participating firms. Cooke and Williams (2004) present a program like this in their study. The students aid the businesses in developing their ventures, and the program is based on integrating workplace conventions into a classroom settings.

3) *Judge-evaluated student consulting* – comprised of student teams that work on company problems. The students receive guidance from professors in solving the business problems of the participating companies. In the end, a panel of judges evaluates the student projects. Lacho (2009) depicts this type of course structure in his study. The aim of the programs is for the students to receive hands-on experience with real world business problems. At the same time, the participating small business managers receive help in developing their business models and marketing plans.

One of the universities that have pursued practical entrepreneurship education on both undergraduate and post-graduate level students is the University of Agder (UiA). In cooperation with their centre for entrepreneurship and Innovation Norway, UiA currently runs two programs. Both of these programs aim to teach students vital business skills, and aid local companies. The programs at UiA seem to be following the structure of the judge evaluated student consulting program (which is presented above).

There is a large amount of research available on the topic of entrepreneurship education, also in a practical context (Low, 2001; Fayolle and Gailly, 2008; Kuratko, 2005, Meredith and Roth, 1998, Rideout and Gray, 2013; Krueger and Carsrud, 1993; Fayolle, 2003; Ellen, 2010). Most of this research focuses on the programs themselves, or on the effect they have on students. The research generally seems to find practical entrepreneurship education to be an excellent learning tool for the students (Pittaway and Cope, 2007).
On the other hand, the literature on the effects these have on the participating businesses is quite scarce (op. cit.). Within this area, some descriptive research is available, but this paper would argue that most of this research focuses on only one or very few effects at the time and lacks the extensiveness to provide a full picture of effects. Most of the previous research argues that the programs have effects on the participating businesses. This paper has categorised the effects found in current literature into four categories. These categories are; strategic effects; intangible effects; satisfaction; and economic effects. There are no studies that cover all of these bases for one sample group.

Another area where the body of research is found wanting, is in analyses of causal relationships. The literary review in this paper was able to uncover two articles with causal analyses. Their coverage is both dated and rather limited. The only article that presents findings that directly pertain to what this paper aims to research is Weinstein et. al. (1992), which examines business characteristics, entrepreneur characteristics, and student characteristics as causes of participating firm satisfaction. It does not examine this in light of any other categories of effects.

Based on the aforementioned gaps in literature, this paper has developed the following research question.

"What are the effects of university business development programs on small firms that participate in them, and what factors influence these effects?"

The two consulting based programs that will be studied in this context are "International Laboratory" and "Gründerlab", which are taught at UiA (UiA, 2015).

This paper will provide an overview of potential effects of the two abovementioned programs. Based on the findings, it will suggest implications for practice in the fields of entrepreneurship education, strategy education and university-firm collaborations. Considering how central SMEs are for the economy, understanding how to influence these businesses is vital. If these programs prove to provide a scene for joint learning, they can prove to be an excellent tool in entrepreneurship education.

The paper will attempt to answer the research question in a four-step process. Firstly, it will perform a literary analysis of the available research within entrepreneurship and strategy education (in a consulting context). Secondly, the paper will use the literary review as a basis for surveying companies participating in the programs. This will provide the paper with a basis for the two next steps, which will be a descriptive and a causal analysis with regards to the effects of the program on the participating firms.

The descriptive analysis will provide a general overview of the effects the program have had on participating businesses. The causal analyses will be based on a factor analysis followed by a regression analysis to determine causes of the effects the programs have on the

businesses, and also an analysis of what effects are more likely to influence the implementations of the recommendations made by the students in the program. The findings will not be eligible for generalisation, due to the limited context and sample size, however it will still provide valuable insights into this field.

The remainder of the paper is structured in the following way. In Chapter 2, the paper will give an overview of the fields of entrepreneurship education and strategy education, before presenting a literary review of the current literature within consulting in the two fields. Chapter 3 presents the methodology used to conduct the research and collect the findings that are used as a basis for answering the research question. It also presents population, items and a factor analysis. Chapter 4 will present the findings of the study, including a presentation of descriptive and causal statistical analysis. Chapter 5 will discuss these findings. Chapter 6 will contain the conclusions, with implications for practice, limitations to the study and suggestions for further research.

Chapter 2 Literary Review

The literature in this paper focuses on two main areas, namely entrepreneurship education and strategy education. Entrepreneurship education is very multidisciplinary (Wilson, 2008). In order to educate students in entrepreneurship, business fields such as strategy, accounting, marketing, etc. have to be combined with product specific understanding, guts, and a good portion of common sense.

Based on a literary review, student-consulting programs in a university context will be examined. This will provide the basis for building a set of variables that lead to a presentation of the hypothesis and conceptual framework that this paper is based on.

2.1 Literary review: methodology

In this subsection, the methods and procedures used in gathering articles for the literary review will be presented. The sources of the articles used were books gathered from the University of Agder's library, an array of article collections and a set of search databases that are presented below.

The article searches have been done primarily through four search engines:

- EBSCOHost
- Academic Search Complete
- Google Scholar
- Business Source Complete
- ORIA

In addition, journal searches and browsing in select journals has been performed. The journals that have been in focus for the paper are:

- Academy of management education journal
- International Business Review
- Journal of International Business Studies
- Journal of world business
- Journal of Education + Training

The most important keywords used in the literary search can be found in the table below.

General	Entrepreneurship	Strategy
- Student consulting - Student consulting effects - Student consulting effects SME - Student consulting effects businesses - Consulting effects - Management consulting - SME consulting - SME students - SBI consulting - SBI evaluation - SBI students evaluation - University business collaboration	- Entrepreneurship education - Entrepreneurship education effects - Entrepreneurship practical education - Entrepreneurship consulting education - Entrepreneurship consulting education effects on businesses - Entrepreneurship consulting education effects on SMEs - Entrepreneur SBI consulting - Entrepreneur SBI consulting	- Strategy education - Strategy practical education - Strategy education effects - Strategy consulting education - Strategy consulting education effects on businesses - Strategy consulting education effects on SMEs - Strategy consulting students - Strategy consulting BSI - Strategy consulting SME

Table 2.1 Literary Keyword Search

From the list above, different combinations, alterations and modifications were carried out in the search for literature, offering a large amount of raw data and articles.

The collected papers were then screened for relevance. A three-step screening and categorisation approach was used in order to focus the literature on the research question:

1. Read abstracts and filtered out the articles that did not focus on the effects relevant to the research question. At this point, some material that was pertinent to the research was let through if it was perceived to have other uses in the research.
2. Read the full articles and categorised findings according to a set of predetermined criteria (programme description, intended effects, actual results, context, independent variables, type of study and additional comments and remarks). Based on these categories a table was created to systematise the literature.

3. The final screening process included analysing the table and creating a preliminary framework for measuring the variables.

The first screening process left approximately 120 articles. After the second screening process, 24 articles were left.

2.2 Entrepreneurship Education in a Practical Context

Entrepreneurship as a teaching subject is currently in its early stages (Low, 2001), and definitions of entrepreneurship education have yet to be developed, rendering the definition of the term a challenge at the very least. Fayolle and Gailly (2008) argue that old ideas and old questions come and go regarding entrepreneurship education, and that this leads to a lack of legitimacy for the discipline. They also disagree with the notion that entrepreneurs are born, and that it cannot be taught, which they argue has been proven false by professors across the academic world.

Before a good definition for entrepreneurship education can be given, the paper will first aim to give a good definition of entrepreneurship. Entrepreneurship education is such a broad topic (Montoro-Sánchez and Soriano (2011) that multiple paradigms may be necessary to completely understand it. It is widely accepted that one essential part of entrepreneurship is the creation of new firms (Lee and Peterson, 2000). Another important component that has been proposed is the range of new and innovative activities focused on creating value and growth in response to perceived business opportunities (McDougall and Oviatt, 1997). Lee and Peterson (2000) also point to Stevenson and Jarillo (1990) who surmised that entrepreneurship involves entities – either individually or in a corporate sense – pursuing opportunities. In the article, they emphasise that innovation is a crucial part of entrepreneurship.

Venkataraman (1997:218) defines entrepreneurship as:

"*The scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and exploited".*

Holt (1992:11) has a slightly more simplistic approach to entrepreneurship:

"*Process where an individual discovers, evaluates and exploits opportunities independently"*

For the purpose of this paper, a wide, yet precise, definition is needed. This definition should encompass the variety within entrepreneurship education. This paper would argue that a suitable definition of understanding entrepreneurship education in the context of this study is:

"Entrepreneurship is an activity that involves the discovery, evaluation and exploitation of opportunities to introduce new goods and services, ways organizing, markets, processes and raw materials through organizing efforts that previously had not existed" (Shane, 2000:4).

Fayolle and Gailly (2008) point out three important objectives for entrepreneurship education:

1. Training entrepreneurs in the field (skills)
2. Preparing entrepreneurial individuals (mind-set)
3. Educating entrepreneurship professors and researches (theory)

Whilst these three objectives are closely interrelated, it is important to see that some programs are more suitable for one particular objective and some may cover more than one. For instance, a practical course, which involves entrepreneurs, professors and students, may target all three objectives. A standard classroom-teaching program may only focus on one or two of the objectives.

Practical programs in entrepreneurship have become increasingly popular (Kuratko, 2005, Meredith and Roth, 1998, Rideout and Gray, 2013). There is a substantial amount of research on this topic, which ranges from case studies to conceptual papers. The majority of this literature can be divided into three segments:

- Designs, frameworks and models for education programmes (Krueger and Carsrud, 1993, Fayolle, 2003, Ellen, 2010, Fayolle and Gailly, 2006) (Barbosa et al., 2008)
- Effects of the programs on students (Charney and Liebcap, 2000, BiliĆ et al., 2011, Galloway and Brown, 2002, Hansemark, 1998, Heinonen et al., 2007)
- Effects of the programs on participating businesses (Sang Suk and Osteryoung, 2004; Hynes and Richardson (2007)Lacho, 2009; Weinstein et al., 1992)

The two first points account for a huge share of the literature. For the latter, which is the topic of interest for this paper, the available literature is substantially scarcer.

2.3 Strategy Education in a Practical Context

Strategy education is not a new field; it stretches far back into history. The early ages of recorded strategy date back c.350 BC to Sun Tzu. His book "The Art of War", laid the fundamentals for warfare tactics, which are the roots to modern business management and competitive strategies (Knudsen and Flåten, 2014).

In contemporary business education, strategy is one of the initial courses students encounter, both at undergraduate and postgraduate level.

The early courses in strategy date approximately 40 years back. They were aimed at business students and stressed coordinating various firm activities (Hafsi and Thomas, 2005). Later two main branches have evolved within the field of strategy: The prescriptive school and the descriptive school (Mintzberg et al. (1998). The two main schools, with all together 10 subgroups, they are depicted below:

Prescriptive schools

1. The Design School.

The most influential view of strategy-formation, used in most MBA courses, and utilised widely in active management. Seeks the best match between internal capabilities and external opportunities (op. cit.).

2. The Planning School

Formal process. Based on the design school, but with more checklists, controls and details (op. cit.).

3. The Positioning School

Analytical process. Accepts most of the premises from the design and planning schools, but also adds emphasis on importance of the strategies chosen. It argues that there are only a few key strategies; positions in a given industry that are suitable, and the ones that can be defended from present and future competitors (op. cit.).

Descriptive schools

4. The Entrepreneurial School.

A visionary process - The school leaves managerial planning, and focuses on intuition, judgment, experience and knowledge of the single leader (op. cit.).

5. The Cognitive School.
A mental process - Draws on the field of cognitive psychology to probe the mind and vision of the strategist (op. cit.).
6. The Learning School
An emergent process - Argues that strategies emerge over time into workable strategies (op. cit.).
7. The Power School
A negotiation process - Argues the use of power and politics to negotiate strategies favourable to particular interests (op. cit.).
8. The Cultural School
A collective process - It focuses on cultural influence in keeping strategic stability, often the opposition to the power and politics struggle (op. cit.).
9. The Environmental School.
A reactive process - This view sees the organisation as more passive and only reacting to the environment, which determines the agenda (op. cit.).
10. The Configuration School.
The view of transforming from one decision-making structure to another (op. cit.).

Many of these schools differ in regards to how to define strategy. This paper has developed a working definition of strategy, quite close to the one widely used by the design school. This definition is as follows: *Analysing the firm's environment for coordinating and utilising the firm's resources and capabilities for long-term sustainable advantage.*

There are two main teaching methods in strategy education which have been found in the current literature, which are as follows.
1. The traditional 'classroom teaching' of theories and models, which is often taught at the introductory level for undergraduate students. The objective of this type of learning is for the students to familiarise themselves with the concepts, theories, and schools of thought (Culbert, 1977, Paglis, 2012, Paul, 2008, Wit and Meyer, 2004). This method is also used in more complex versions at graduate levels.
2. Hands-on student interaction and assistance to small firms. Students receive real world experience with firms in need of strategic planning assistance; they get to bridge the gaps between theory and practicality through acting as consultants (Culbert, 1977, Robinson et al., 2010, Allard and Straussman, 2003, Paglis, 2012, Kennedy et al., 1979). This is often taught

to upper level bachelor students, and master students with prior knowledge in the theoretical aspects of strategy.

The paper will focus on a branch of the second method, which is student-consulting programs.

2.4 Consulting

Consulting is widely used today in a myriad of different sectors such as business, IT, engineering, etc. (Aharoni, 1997). Consulting in the context discussed in this paper predominantly focuses on strategic management consulting. This type of consulting is defined by Sabari (1977) as a method for improving business and management practices. He argues that consultants must have an array of capabilities, both communicative and analytical, when interacting with clients. Some important capabilities can be interviewing techniques, ability to diagnose the participating firms' problems, ability to communicate with the participating firm, knowledge sharing, and the ability to present proposals and conclusions, both orally and in writing (op. cit.). Consulting is a very wide term and it can be difficult (and sometimes even counterproductive) to generalise this term too much (op. cit.). This is due to the diverse nature of businesses and, by proxy, the diverse and varied nature of their needs.

Consulting (and consultants) has come under increasing scrutiny and criticism within the business press (Johnson, 2013, Hill, 2012, Schein, 2014, Newlands, 2013, Williams, 2013). While academic literature has emphasised the often intangible nature of consulting services (Wright and Kitay, 2002), the business press is not as forgiving. These intangible effects can be anything from instigating internal reflection, to working with the organisational culture of the particular business. This further emphasises the difficulty in pointing to effects of consulting.

As previously mentioned, educating people in strategy and entrepreneurship in a real life context has increased in popularity in recent years. This method of teaching often combines several fields of study into one practical course. An entrepreneurship-consulting course for instance, is often introduced to students who are in the later years of their respective bachelors or masters degrees (McMullan et al., 1986, Chan et al., 1994, Brindley and Ritchie, 2000). At this level, the students have a wide enough set of capabilities from different courses to handle a more diverse set of challenges.

With a wider set of competencies (or knowledge bases) being used by the students in the implementation of the consulting tasks, an empirical analysis of the different courses in consulting can be argued to have a great degree of overlap. Where the divide often arises is in whether the programs deal with SMEs or larger companies. In section 2.6, the focus will mainly be on general consulting programs and their effect on SMEs. It will mainly focus on business students and programs within entrepreneurship and strategy, but it will not separate the two fields at that point. For that, the available literature has too much overlap in its content. It will however filter out topics that are either too general or only cover the effects that these programs have on the students involved.

2.5 Terms and General Information

Before presenting further literature, this paper will briefly explain some of the terms and abbreviations found throughout the paper:

Terms	Explanation
HE	*Higher education.* Study programs running at undergraduate level or higher
OBSP	*Outsider based strategic planning.* When outsiders of the company make the strategic planning for the firm (Robinson Jr, 1982)
SBDC	*Small business development centre.* Departments at universities, which work together with small businesses with the aim of helping them grow, they provide free student consulting (U.S.SmallBusinessAdministration, 2015)
SBI	*Small business institute.* Institutions, which consists of professors, whom act as links between small businesses and experiential student team consulting. In the U.S., there are states-wide networks of these institutes (SmallBusinessInstitute, 2015)
SME	*Small and medium sized enterprise.* There are varied definitions of what constitutes an SME. The

	European commission classifies a SME as a company with than 250 employees, a turnover of less than €50 million (EU, 2015) and a balance sheet total of less than €43 million (EU, 2015).This definition will be the classification used in this paper (EU, 2014).
Innovasjon Norge (Innovation Norway)	A government organisation that focuses its activities towards enhancing Norwegian start-up companies, developing districts in Norway, and the Norwegian tourism industry. Innovation Norway does this through issuing grants, loans, and supplying marked data and analytical aid to entrepreneurs (Innovation-Norway, 2015)

Table 2.5 Terms and General Information

2.6 Systematisation of Literary Body

This section presents an overview of the specific literary body that concerns the effect practical consultancy education programs have on businesses. The paper will highlight the format of the programs, the intended and actual effect of these programs, the context and type of study, as well as some additional remarks where necessary. Not all the articles examined are similar in structure and content, so therefore not all of these fields will be covered for every article, but the review will be as detailed as possible. Below is the overview of the articles.

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Mcmullan, Long and Graham (1986) "Assessing economic value added by university-based new venture outreach programs." Journal of Business Venturing 1.2	Students participate through a university course/module in assisting new ventures with plans. The entrepreneurs and companies were provided (selected) by the university	1. Time gained or saved in advancing their new venture. 2. Knowledge gained of new venture development. 3. Information added of use in pursuing their new venture. 4. Strategic changes made. 5. Contacts made 6. Overall perceived value of experience 7. Capital injections (New capital raised) 8. Increased or decreased employment level 9. Made structural advances in their ventures	Average value added: 1. $ 6,097.50 2. $ 9,389.47 3. $ 6,293.48 4. $ 16,937.50 5. $ 7,238.89 6. $ 37,269.00 7. $ 5.1 million 8. New employment generated: 20.4 Full-time equivalence (FTE) 9. Had a effect, though varied results (from little to large) Initial investment: $ 75 000. Perceived total value: $ 1 750 000	University of Calgary in 1984 Majority of consulting done by second year MBA students. 12 different courses Industry not specified	Theory development Quantitative Descriptive reports of frequencies and averages. Data collection through phone interviews. 50 responses out of 63 participants. 79.4% response rate.	The businesses themselves were asked to estimate the added value. When more than one number was mentioned, the lowest one was chosen. The study also measured the progress in achieving the objectives of the assignment (structuring the venture). Also here it was found that it had an effect.	
Lee, S. L., Osteryoung, J. S. (2004) "A comparison of critical success factors for effective operation of university business incubators in the United States and Korea" 2004, Vol. 42 Issue 4, p418-426	Business incubators in a university context. One of the services provided here is entrepreneurial education	Accelerate development of new companies and speed up commercialisation of technology. Find critical success factors for effective operation of business incubators	Entrepreneurial education cooperation was found to have a positive effect on the firms, but was statistically insignificant in the t-tests. Clarification of goals and strategies were the only significant effect of business incubators	Kangnam university (Korea) and Jim Moran institute of global entrepreneurship (USA) University business incubator with focus on technology entrepreneurs	Theory testing. Quantitative: Factor Analysis, T-test. Questionnaire sent by mail to participants and control group. Sample size 300. 210 responses. 62% response rate. Likert scale	Argue that entrepreneurship education is an important feature of business incubators in achieving the goals of accelerating development. This paper does not describe a concrete education programme, but sees these programmes as potentially being a key success factor in new ventures.	The perceived critical success factors found to be important for US university business incubators, they are shown to have a positive effect according to the study: *Goal* (Clarity- making it clear to participants and students, what they should specifically achieve) *Operations strategy* (Promote university and provide students with laboratory for learning) Statistical values: Eigenvalue: 5.245 % of variance: 27.47 Cronbach's a: 0.868

Table 2.6a Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Mazura M. and Othman, M (2011) "CoBLAS: In calculating entrepreneurial culture among higher education institutions´ students" International Journal of Social Science and Humanity 1.1	Consultancy based learning in the university of Limerick, Ireland Student groups act as consultancy teams for the companies.	Help businesses with problems outside their own comfort zone. Solve everyday problems and identify opportunities.	The firms get solutions or at least the chance to see the problem through new eyes. A good solution can have tangible pay-offs.	Limerick Ireland Student level not specified Industry not specified	Theory Development Qualitative Mainly literary reviews.	Discusses several types of programmes, and argues the shared benefits for both students and companies in consultancy based learning. Argue that measurement of success can be in monetary and non-monetary terms.	
	CoBLAS Integrating education and consulting programme	Educate students and help businesses.	Positive effect on students: -Enhanced the interest of entrepreneurial fields -Increased confidence after real world experience	Malaysia Graduate level Industry not specified	Theory Development Qualitative Mainly literary reviews.	This study had more focus on the effects it had on the students. It argues briefly that it had a positive effect on the students, but other than that, it is rather vague.	
Solomon G. T. and Weaver K. M. (1983) "Small Business Institute Economic Impact Evaluation" American Journal of Small Business 8 (1)	The Small Business Institute (SBI) program is about using the knowledge and capabilities of universities and colleges in small businesses that are in need of this. The concept here is student counsellors working with businesses under the guidance of a professor for the duration of two semesters.	A positive effect on small business´ economic factors and therefore affected the probability of success. Growth in employment Financial growth in the client companies.	16,3% increase in employment (national statistics showed a growth of 1,1%). Also part time employment grew substantially. The client perception was that they became more financially stable. Gross profit: +16,28% (Average: 11%) Net profit: +43,51% Net worth: +11,65% Owner´s compensation:+14,27%	Universities in the US Student level not specified Industry nor specified	Theory Development Quantitative Descriptive reports of frequencies and averages. Mailed questionnaire, Sample size 1197, response 166, 13.87% Field interviews, sample size 189, response 40, 21.2%	This is an initial pilot survey of the economic impact of the SBI program on client small businesses. The authors argue that this may be useful in developing a generally accepted technique to collect and analyse the level of economic impact in client businesses assisted by the SBI programme. Evaluated the firms based on these criteria: employment data, financial data, and financial profiles.	

Table 2.6b Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Mazura M. and Othman, M (2011) "CoBLAS: In calculating entrepreneurial culture among higher education institutions´ students" International Journal of Social Science and Humanity 1.1	Consultancy based learning in the university of Limerick, Ireland Student groups act as consultancy teams for the companies.	Help businesses with problems outside their own comfort zone. Solve everyday problems and identify opportunities.	The firms get solutions or at least the chance to see the problem through new eyes. A good solution can have tangible pay-offs.	Limerick Ireland Student level not specified Industry not specified	Theory Development Qualitative Mainly literary reviews.	Discusses several types of programmes, and argues the shared benefits for both students and companies in consultancy based learning. Argue that measurement of success can be in monetary and non-monetary terms.	
	CoBLAS Integrating education and consulting programme	Educate students and help businesses.	Positive effect on students: -Enhanced the interest of entrepreneurial fields -Increased confidence after real world experience	Malaysia Graduate level Industry not specified	Theory Development Qualitative Mainly literary reviews.	This study had more focus on the effects it had on the students. It argues briefly that it had a positive effect on the students, but other than that, it is rather vague.	
Solomon G. T. and Weaver K. M. (1983) "Small Business Institute Economic Impact Evaluation" American Journal of Small Business 8 (1)	The Small Business Institute (SBI) program is about using the knowledge and capabilities of universities and colleges in small businesses that are in need of this. The concept here is student counsellors working with businesses under the guidance of a professor for the duration of two semesters.	A positive effect on small business´ economic factors and therefore affected the probability of success. Growth in employment Financial growth in the client companies.	16,3% increase in employment (national statistics showed a growth of 1,1%). Also part time employment grew substantially. The client perception was that they became more financially stable. Gross profit: +16,28% (Average: 11%) Net profit: +43,51% Net worth: +11,65% Owner´s compensation:+14,27%	Universities in the US Student level not specified Industry nor specified	Theory Development Quantitative Descriptive reports of frequencies and averages. Mailed questionnaire, Sample size 1197, response 166, 13.87% Field interviews, sample size 189, response 40, 21.2%	This is an initial pilot survey of the economic impact of the SBI program on client small businesses. The authors argue that this may be useful in developing a generally accepted technique to collect and analyse the level of economic impact in client businesses assisted by the SBI programme. Evaluated the firms based on these criteria: employment data, financial data, and financial profiles.	

Table 2.6c Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Hynes,B and Richardson, I (2007) "Entrepreneurship Education: A mechanism for engaging and exchanging with the small business sector" Education + Training 49 (8/9)	Hands on consultancy programme that pairs student groups with a lecturer	Be relevant and applicable to the entrepreneurial society. Foster interaction and networking. Technology transfer of scientific knowledge resulting from research which firms can apply to innovation and development of their products, services and processes.	Owner/manager receives a written consultancy report with recommendations. This report is often used to present to third parties for funding or to attract new customers. Increased level of self-awareness of their level of managerial skills and competencies. Improvement in analytical and critical thinking and decision-making skills. The owner/manager also learns about problem solving and report-writing.	University of Limerick Student level not specified Industry not specified	Theory development	A description of four entrepreneurship education initiatives in operation at the university of Limerick. It presents more the perceived results from the perspectives of the authors who are professors at the universities (or so it seems). It does give a very useful outlook on the idea of knowledge transfer. 550 firms from the Mid-West region of Ireland have participated in the consultancy initiative. The two most relevant programmes are the two first ones provided. General suggested benefits for the businesses from the different programmes: - Learn how to prepare relevant documents such as a business plan and marketing plan; - Gain knowledge in key functional areas of the business – we have seen that particular learning has taken place in areas such as marketing, conducting marketing research, administration of market research instruments, analysis and interpretation of the research results; - Provision of and access to important sources of information/databases; - Provision of a forum for interactive learning which is customised and relevant to their specific firm needs; and - Establishment of new linkages between universities and other agencies via workshops and other fora – his provides for an important contact point for accessing further information, research and for the basis of actual on going working commercial relationships.	
	Post-graduate students take on the role of marketing consultants. They are presented with challenges, students engage in discussions and complete a marketing plan which is presented to owners	Be relevant and applicable to the entrepreneurial society. Foster interaction and networking. Technology transfer of scientific knowledge resulting from research which firms can apply to innovation and development of their products, services and processes.	The owner/manager obtain a practical set of marketing suggestions for more effective marketing of firm activities. Some get more physical design related promotional tools (Brand names, slogans, web sites etc.). Often used by managers for securing new large customers. Greater acquisitions of knowledge.	University of Limerick Post-graduate students Industry not specified	Theory development		
	Role model days are days when students can interact both formally and informally with owners/managers.	No information on the possible gains of the businesses	No information on the gains of the businesses	University of Limerick Female students Industry not specified	Theory development		
	Technology transfer from third-level institutions into the workplace. This is more about directly working with the university. Can be through direct training, support services or action research.	Benefits though implementation of new techniques. Providing people within the business with knowledge they might not access otherwise.	Not specified.	University of Limerick Faculty interaction Software industry	Theory development		

Table 2.6d Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Gregory, J (2010) "Working between to expert clients: Facilitating a Solution Focused approach in Higher Education through live consulting" The Journal of Solution Focus in Organisations 2 (1)	Temporary learning community using a Solution Focused (SF) approach. Students act as reflective team coaches to the business owners. The students take the role of for instance marketing communication staff.	To come up with solutions for SMEs at the same time as crediting students on a master level for their work.	The businesses get to reframe the silent narratives about their challenges and speak about them from a different perspective. It makes the owner start to devise solutions for themselves. They also get the opportunity for their business to be the focus of a team of (subject experts) students. Clients found the insights and ideas very useful. The clients were overall very happy about the service provided.	Oxford Summer School Master level No specific industry	Theory development Qualitative Case observations	The general purpose of the paper is to provide evidence that SF can assist businesses at the same time as satisfying the students' assessment towards a master's degree. Presents a case of SF in practice, which describes a set of American students attending summer school at Oxford (with the author as SF facilitator). An advantage to the SF approach is that programmes can be aligned and designed around the needs of the SME business owners which make them relevant and attractive to this important group in society.	
Ritchie, .B and Brindley, C. (2000) "Undergraduates and small and medium-sized enterprises: opportunities for a symbiotic partnership?" Education + Training 42 (9)	Cooperation between undergraduate students and small businesses. The students undertake direct commercial projects in direct engagement with the SME, present findings and get debriefed. Another key part was an academic tutor who mentored the undergraduates and mediates potential difficulties that arose in relation to the completion of the project.	To increase graduate hirings from SMEs. Increase the responsiveness of higher education to the needs of the labour market. Enhance the employability of the graduates.	The students became marginally more interested in working for an SME. There was a significant change in the view that graduates can provide a valuable contribution in terms of providing different approaches to resolving business problems. The managers considered the undergraduates to have poor understanding of the needs of the smaller business, a view that was significantly reinforced by the interaction with the undergraduates. 70% argued that the work had benefited the business directly and 72% said it had been a positive experience for the company. In the end, some attitude shifts were found, but no major shifts.	North West UK Bachelor level Sectors: Manufacturing 4 Food processing 3 Technology R&D 2 Retailing 2 Other services 2	Theory development Qualitative Longitudinal approach of monitoring the projects. Focus groups. Quantitative: Questionnaire (before and after participating) Average and distributions. 12 companies involved. Tested before and after the program.	The essence of this article is that a program was established to make graduates more likely to be hired in an SME. The idea is that interaction between the students and businesses could facilitate a much-needed cultural shift both on the supply and demand side in this context. The employers are worried that the graduates will be too academically focused and lack real world orientation. From the student perspective, the SME offer unattractive salaries and perks and restrict career opportunities. The research questions are: What are the perceptions of SME managers concerning employability and the attributes that graduates can offer their organization? What are the perceptions of undergraduates concerning the employment prospects within SMEs? Are there lessons that we could learn from this process that may enhance employment within the SME sector for business and non-business graduates? Would a meaningful engagement of the two potential partners effect any changes in these perceptions?	

Table 2.6e Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Chrisman, James J., R. Ryan Nelson, Frank Hoy, and Richard B. Robinson, Jr. (1985),"The Impact of SBDC Consulting Activities," ***Journal of Small Business***	The study looks at the efficiency of SBDC programs in monetary terms for the companies and the state in form of tax revenues. The firms were aided with: Accounting Financial Working capital Work flow	Increase in: Sales Employment Profits	Incremental increase: *Georgia firms* Sales 21.2% Employment 9.8% Profits 18.0% *South Carolina firms* Sales 37.9% Employment 11.6% Profits 34.4%	Georgia and South Carolina in the United States Graduate students and Faculty members from both both universities No specific industry	Theory development Telephone and mail survey of 327 small businesses. 84 usable responses for value added in Georgia state, 25.7%.	The paper argues that SBDC programs benefit both the firms that participate and the states that facilitate the programs through increased tax revenues and employment. The study compare the state averages of small businesses increases of sales, employment and profits to the ones which participated on the programs. The papers methodology has been criticized by Elstrott (1987), the authors have later	
Elstrott, John B. (1987), "Procedure for Improving the Evaluation of SBDC Consulting Activities," ***Journal of Small Business Management*** **25 (January), 67-71**	Students provide small business owners counselling services.	The purpose of the program was to assist the businesses, and provide on-hands learning to students. For the businesses: Wanted to increase sales, employment and profits.	*Qualitative* Prompt service 79% Effective 75% Ease of support 84% Met expectations 72% SBDC consulting compared to other "free" consulting options as Banks, CPA and etc.: Superior 38% Equal 26% Inferior 10% Undecided 26% *Quantitative* Average increases: Sales 28.3% Employment 14.7% Profits 43.3%	Louisiana firms receiving SBDC counselling The United States Graduate students and Faculty members Replication of Chrisman et al. (1985) study	Theory development Qualitative and quantitative study. Chi-square goodness of fit. Survey mailed to 172 Louisiana clients. 61 usable responses, 53.5%. 30% response rate on quantifiable	4-point recommendations for analysis of similar studies have been given. Finds positive effects of SBDC counselling. However, the study could not find a control sample for the quantifiable data. Louisiana was also recovering from a recession during study.	

Table 2.6f Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Weinstein, A, Nicholls, J, & Seaton, B 1992, 'An evaluation of SBI marketing consulting: the entrepreneur's perspective', *Journal Of Small Business Management*, 30, 4	Small Business Institute program. MBA students participate in six different marketing SBI courses. Students develop marketing strategies for small businesses.	1a.Perceived benefit to small businesses. 1b. Importance of marketing recommendations to entrepreneurs. 2. Perception of students by business clients on characteristics; professionalism; business knowledge; practicality; overall value. 3a. Relationship between satisfaction and entrepreneurial characteristics. 3b. Relationship between satisfaction and perceived student characteristics.	1a. Satisfied 70.7%. Indifferent 17.2% Dissatisfied 12.1%. 1b. Very important 13.8% Important 36.2% Somewhat imp. 29.3% Not important 20.7% 2. Above average: Professionalism 74.5%; Knowledge 50% Practicality 56.8% Overall value 55.2% 3a. No significant relationship between satisfaction and entrepreneurial characteristics. 3b. Statistically significant for variables: • Business knowledge • Practicality	Hofstra University Florida International University U.S. 87 SBI clients who received marketing assistance over the period 1985-1989 MBA students No industry specified	Theory testing Quantitative: Research questions 1 and 2: Descriptive statistics: Mean and Distribution. Research question 3: Stepwise regression Primary data by telephone surveys of 58 client firms. Response rate 87%	The study argues that students serve valuable consulting services to small businesses and entrepreneurs. Especially due to their inexpensive advice and many of the participating entrepreneurs are young and inexperienced. The dependent variable satisfaction was measured in a numerical 11 point 0-10 bi-polar scale with two endpoints; extremely dissatisfied (0) and extremely satisfied (10). Entrepreneurial characteristics: Gender, Ethnicity, Age, Education, Years of Business Experience	Business Characteristics: Age of Firm, Type of Firm, Number of Employees, Legal Structure. Student Characteristics: Professionalism, business knowledge, practicality of recommendations, class standings, size of student team, and team grade for report)
Robinson, Richard B., Jr. (1982), "The Importance of 'Outsiders' in Small Firm Strategic Planning," *Academy of Management Journal* 7 (March), 80-93	Students provide in-depth consulting to small business owners.	The purpose is to positively influence the participating companies in the fields of corporate strategy, business strategy and functional area strategy to small firm managers. With providing valuable real experience and learning for the participating students and staff is also important.	Shown to be significantly higher in post-OBSP period, intrinsic values below: Growth Percentage increase in total sales 25.2% -Profitability Absolute increase in net profit before taxes/total sales 3.84 times -Productivity Absolute increase in sales/employee $155 -Employment Percentage increase in fulltime employees 15.5%	University of Georgia MBA´s, Ph.D. students and professors counsellors	Theory testing Sample of 101 small firms and 2 control groups of comparable firms Chi-square test shows all groups sample sizes representative Correlated sample *t*-test and MANOVA	The purpose of the paper is to find out if the consulting help the small firms receive has an impact. Study argues that small business owners because of various reasons don't have time or resources available for strategic planning, hence they benefit with overall effectiveness by receiving consulting services by MBA´s, Ph.D. students and professors in SBI programs. The participants: MBA students, Ph.D. students with MBA degrees and professors, holding MBA´s staff Small Business Development Center (SBDC). Prior business experience is prerequisite to become a "staff consultant".	

Table 2.6g Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Romney, M, & Cherrington, J 1993, 'Implementing a Graduate Management Consulting Course', *Journal Of Information Systems*, 7, 1, pp. 48-61	Consulting course for MBA and non-systems Master of Accounting students, usually near the end of their program. They work in project teams to solve systems and business problems in organizations. Clients and coaches are identified before course starts.	Finding right clients for the students, with problems in the specialties. Find coaches and train them to guide. Fulfil the client's needs and solve their problems.	*Student evaluation:* Received jobs 22% Recommend 100% Top 10 course 65% *Client evaluation:* Satisfied 93% Use again 80% Recommend 80% Reasonable time 93% Appropriate fees 93%	Birmingham Young University, the United States Master level No industry specified	Descriptive case study. Students: 40 responded 78% Client: 15 responses 88% 5-point Likert scale used	The study argues for a student-consulting model. The sample of client responses is small.	
Haines Jr., GH 1988, 'The Ombudsman: Teaching Entrepreneurship', *Interfaces*, 18, 5, pp. 23-30	Program run by students in consulting small businesses. The program hires the professors as coaches when needed in the client cases.	Learning for participating students (through practical experience) and aiding local small businesses.	1. Total Revenue Increase to clients: 1977 $70,000/year 1978 $303,000/year 2. Total Cost Decrease 1977 $200,000/year 1978 $130,000/year 3. Total Gross Profit Change 1977 $270,000/year 1978 $433,000/year 4. Total Employment increase 1977 50 people 1978 15 people	University of Toronto	Descriptive case study. Client survey respondents: 1977 12, 12% 1978 31, 20.5%	The study analyses a student program on its learning effects and economic benefit to clients. The program cost $60,000 for the clients per year, but the economic increases are many times the cost.	

Table 2.6h Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Hicks Jr., C 1977, 'Deriving the maximum benefit from your SBI student counselor', ***Journal Of Small Business Management*****, 15, 2, pp. 12-17**	SBI counselling programs utilise students in aid of small businesses with limited resources.	Students assist small business owners in the areas of bookkeeping, marketing, business plans, site location, regulation compliance and make employee attitude surveys. Through practical experience the students make business acquaintances		Indiana State University, the United States No specific industry Student level not mentioned	Conceptual	The paper argues that the client must make an active effort to get the most benefit out of the student counsellor, and must remember that they are not experienced consultants. The paper also outlines recommendation on what is required from the students in order to achieve good results. The paper has few references.	
Kiesner, W. F. (1987), "A Study of SBI Client Satisfaction Levels," ***SBIDA National Proceedings*****, San Antonio, Texas: 271-276**	Student counselling programs assisting small business owners in the Southern California area.	Provide good consulting services for businesses.	Average satisfactory levels out of 10: Large schools 7.598 Small schools 8.955 Manufacturers 7.385 Retailers 7.929 Service firms 8.431	*Large and small schools in California including (but not limited to)*: UCLA Bernardino Lutheran College Whittier College Westmont College Student level not specified Clients: Retailers Manufacturers Service firms Industry not specified	Theory development Sample survey. Surveyed 146 small business owners, response rate 76.8% Responses: 102 large school 44 small school 10-point Likert scale.	The study does not explore or speculate why small school SBI clients are more satisfied. Neither does it explore why service firms are most satisfied. The study was done only 2 months after SBI programs completion, could be too early to measure full effect of the program.	

Table 2.6i Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Burr, Pat L., and George T. Solomon (1977), "The SBI Program: Four Years Down the Academic Road," *Journal of Small Business Management* 15 (April), 1-8	District run program, cases divided among participating schools. Interdisciplinary teams of upper bachelor and graduate students supervised faculty in participating institutions. They counsel volunteering small businesses.	Improve management, financial performance and accounting procedures while providing a basis for practical learning for students and staff.	Positive perceived benefits by faculty: Quite positive evaluations by faculty on teaching/learning and for the university. Program evaluation by clients: Excellent 29.5% Very good 34.8% Good 23.2% Fair 6.8% Poor 1.9% Other 3.8%	Nation-wide USA Upper division and graduate students Not industry specific Types of firms: Retail 50.6% Service 32.6% Wholesale 12.6% Manufacturing 26.1% Construction 4.5% Other 6.1%	Theory development Evaluation forms to faculty and participating firms.	Some cases required interdisciplinary teams of professors. The paper argues that student counselling is beneficial for all parties involved; the universities, students and small businesses. However, the paper emphasizes the importance of faculty recognition, to promote the extra hours required by them.	
Cannavacciuolo, L., Capaldo, G., Esposito, G., Iandoli, L., & Raffa, M. (2006). Chapter 4. To support the emergence of academic entrepreneurs: The role of business plan competitions. In *International entrepreneurship education: Issues and newness* (pp. 55-73). Cheltenham, UK: Edward Elgar Pub.	Facilitates firms implemented through academic spin-offs, i.e. based, or take advantage of ideas developed by students or academia faculty.	In case: academics from all fields enter a competition and receive support and guidance. The winner receives access to the town´s incubator.		University of Naples Federico II in Italy No specific industry Undergraduate, graduate students and faculty members participate with their own business models from their academic fields	Conceptual study. With case study.	The study argues that it is necessary to supplement academic spin-offs with formal support, and with informal support. Federico II Start Cup has shown an effective model for formal and informal support. The paper explores preliminary findings from Federico II Start Cup to lay the grounds for further designing of tools supporting academic spin-off creation.	

Table 2.6j Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Dumouchel, L. (2010). Knowledge Transfer and Relationship Building Among Students, the Small Business Community and the University. *Proceedings of the International Conference on Intellectual Capital, Knowledge Management & Organizational Learning*, 154-160.	The course is designed as a small business-consulting firm, where the students take on a "junior partner" role and the supervisor a "senior partner" role. The supervisor secures firms to the course. Course spans over 2 semesters.	The students perform: Needs assessments for the clients. Develop project proposal. Obtain client approval. Follow implementation of the agreed upon course objectives Students are expected to receive expertise in the fields of engagement, and the clients receive assistance	Teams meeting objectives: 94.7% Client evaluation: Most cases satisfied with results. Most cases value benefits. Appreciate learning new management techniques and tools	Thompson Rivers University in the United States The course is taught to Bachelor of Tourism Management students late in their program, the clients are tourism-related enterprises	Theory development 38 clients surveyed	The paper states that proper matchmaking between client and student culture and values is important for successful engagement	
McDougall, B. (2014). Help wanted Small businesses and the people who help them grow. *Canadian Business*, *87*(13), 74-80	Students from different disciplines perform as employees for companies through the educational programs, timeframe can vary between a few weeks to over a year dependent on the program.	Students get to test out classroom theories and receive practical experience. They also learn new skills from the field, which they can use in their final school year		University of Toronto, Canada Student level not specified Industry not specified	Article, conceptual.	The collaborations are co-ops and internship programs, they provide both the students and the businesses the chance to assess each other The article argues that consulting: -Reduce R&D costs -Explore next-generation technology -Gain access to strategic intellectual property -Bring innovation to market more quickly -Businesses get to assess potential new employees	

Table 2.6k Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Cooke, L. & Williams, S. 2004. Two Approaches to Using Client Projects In the College Classroom. *Business Communication Quarterly*, 67, 139 152	Approach 1: Self-sustaining facility, which receives compensation for client projects. Students are paid and work on the projects, aided by supervisors. Approach 2: For-free student consultancy service. Client businesses do not pay. Large projects are divided between teams of 4-5 students, the professor acts like a project manager	Help potential entrepreneurs develop their ventures. Integrating workplace conventions into classroom settings.		Clemson University and University of Texas in the United States IT-students work as consultants, web-developers for client firms. Master level students IT-industry	Theory development	Businesses save costs by using low costs students. Since it´s free or low cost, clients can undertake projects that have been put aside. Student´s pressure to showcase work, increases quality. Provides potential employees to the firms, and trains them with no or low cost to the potential employer. Facilitate communication between academia and businesses Approach 1: Students are paid according to the satisfaction of the supervisors and clients. Approach 2: Since the student grades are received in groups. They have the opportunity to fire unproductive team members.	
Lacho, K. J. 2009. A Small Business Institute (SBI) Project: Multiple Views: Client, Students, Judges. *Allie Academies International Conference: Proceedings of the Academy for Economics & Economic Education (AEEE)*, 12, 14-23	An SBI course with students as consultants for a firm. There were 3 teams working on the same company problem. The teams receive guidance by professors, and have to display projects that get evaluated by judges	Help small business owners develop their business models and marketing plans. Provide on-hands experience to students through real life business problems.		The University of New Orleans Graduate business students participated in the course, the client company was a dining restaurant. Tourism industry	Theory development	Client evaluation: *Fall 2007:* Projects were mostly beneficial. Made it easy for manager to target the right market segment. *Spring 2008:* The manager was not satisfied because lack of commitment from 2 of the students. 1 student provided the manager with a lot of insight and benefit. The student was very involved and made good potential customer database suggestions	

Table 2.6l Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Sonfield, M. (1981) "Can student consultants really help small business?" Journal of Small Business Management 19 (4)	A generalization of programs involving students consulting for businesses.	- Time: The SMEs do not have time to do all the tasks that should be done. Tasks with long-term benefits tend to be postponed. Since the students receive academic credit for the course, he usually has time to do the work. - The student also usually has a more structured academic approach to business problems than a small business owner. The analytical approach differs from the typical business practitioner. The student can offer an alternative approach that in cooperation with the approach of the business owner may create synergy. - Can provide a fresh point of view. Creativity in a field is often the result of unexpected questions being asked. - The students gather facts and may se the problems such as low sales are not problems but symptoms of another problem. - The guidance from the faculty members who are often experts in the field is also essential to the success. They also tend to match students with firms. - Often the business students have a more wide academic background than the owner who tend to be more specialized. - The students have a large network in the university to draw upon. As well as the university library, which is an important resource. - Students are also able analyze the environment.		Mainly Covers the US.	Conceptual	- Argues that the selection of student consulting programs under the guidance of faculty members. - Point out that various studies have been conducted to measure the success of the SBI program and the results are quite positive. - A study of 200 SBI projects in the University of Washington and the University of South California showed that about 2/3 felt like they had benefited from the experience. A similar study performed on a national scale in the US found that clients called the study "good", "very good" or "excellent". There are also studies that are not as favorable, but they all have acceptable levels of satisfaction. - The role of the business owner in the consultant client relationship is critical to the potential success of any consulting project. - The value of the consulting projects increase with 1. The number of times the student visited the client, 2. The average lengths of the consulting visit and 3. The amount of contact between the client and the faculty advisor.	
Pittaway, L and Cope, J. (2008) "Entrepreneurship Education: A systematic Review of Evidence" International Small Business Journal	Does not point to particular programs	Students can provide an important resource base for the firms, enabling growth and improved business performance. - Both students and firms benefit vie engagement in problems, enabling experiential learning to occur. - The entrepreneurs become more open to hiring graduates (and the students become more interested in working in SMEs).		General literary review	Literary Review Thematic Analysis (NVivo) No student level specified No industry specified	One of the topics covered is Student-Entrepreneur interaction. This covered 4,1% of the literature covered in the review. The topic of education programs for student consulting is a small sector within this segment. And within this, value for the firm is a small second level sector covering about 1,4%	

Table 2.6m Literature Review

Source	Format of Education Program	Intended effects of education program	Results of education program	Context (Where?)	Type of Study	Remarks/comments	Independent variables
Mansor, M. and Othman, N. (2011) "Consultancy-Based Entrepreneurship Education in Malaysian Higher Education Institutions" International Proceedings of Economics Development & Research 5 (2)	Consulting based entrepreneurship education	Businesses are expected to benefit from the consultancy-like assistance provided by the students and experts from the university	No testing done	UK and Malaysia Graduate level in Malaysia Unspecified in UK Industry not specified	Conceptual Builds on existing literature	Argues that entrepreneurship education should be mainly practically oriented and not overloaded with theoretical expositions. The paper also has a small empirical qualitative study of 8 students. It argued that the programme increased their entrepreneurial intent	
Chan, K. C. & Gordon, C. A. 1994. Academia – Industry Fusion. *Industrial and Commercial Training*, 26, 28-32	Action Learning, which is close cooperation with enterprises. It is often based in MBA programmes	Creating a match between the workplace needs and the people being educated. For the businesses, heuristic learning holds the key to adapt to the changing environment		A global array of MBA programs. Not a specific industry	Conceptual Builds on existing literature	This paper argues that action learning is key to linking academia and the enterprise and making sure they both move in the same (and right) direction Argues that it gives opportunities within hiring graduates	

Table 2.6n Literature Review

2.6.1 Categorising Effects

Firstly, the majority of the articles argue that consulting programs have a positive effect on the companies that participate. There are however some exceptions. Lacho (2009) presents results where the feedback has been more mixed, in that the findings point to a lack of commitment that some participating firms experienced from some students.

Some of the literature is more conceptual and vague, like Mazura and Othman (2011). A typical trait of the more vague articles is that they argue that programs "may lead to positive effects" without elaborating (op. cit.).

Based on the literature review, this paper would argue that that the variables identified in the articles can be grouped into four categories. In each category, a set of variables is identified, which will be used as a basis for further analysis.

The first category addresses **satisfaction** of the businesses/entrepreneurs participating in the programs. Gregory (2010) argues that participating firms find the insights and ideas of the students to be useful. He also points to overall satisfaction with the services provided. The overall perceived benefits for the owner of the business is also discussed (Brindley and Ritchie (2000) and Burr and Solomon (1977). Weinstein et al. (1992) point to a link between student characteristics (business knowledge and practicality) and company satisfaction with the service. In addition, they discuss the overall perceived benefits. Lacho (2009) examined the satisfaction of the participating firms with student commitment to the task, while Dumouchel (2010) found that most participating firms were satisfied with the results of the projects and valued the benefits. Romney and Cherrington (1993) measure satisfaction based on the following criteria: Satisfied, use again, recommend; reasonable time usage, and appropriate fees. Most of the literature uses a Likert-scale for evaluating satisfaction (Kiesner, 1987; Weinstein et. al., 1992; Gregory 2010).

Based on the literature above, this paper will define satisfaction as a general attitude towards the program, which comes from the program delivering a valuable contribution to the firm and the participating entrepreneur.

The second category is the **strategic effects** of the programs. Sang Suk and Osteryoung (2004) suggest one such effect to be the acceleration of the business creation and

development; McDougall (2014) points to how businesses manage to bring innovation to the market faster when they collaborate closely with academia. This gave the businesses a chance to explore the next level of technology (op. cit.). Hynes and Richardson (2007) point to the firms receiving concrete marketing plans and recommendations (also reinforced by Lacho, 2009, Weinstein et al., 1992), with rebranding and/or survey information that the company can use. These marketing plans (if good and utilised correctly) can provide competitive advantages.

Another strategic opportunity is the chance to test and work with graduates that may have potential for future employment, (Chan et al. (1994) McDougall (2014), Pittaway and Cope (2007). This can give the companies a good way of both testing and teaching potential employees at a low cost. It can also give the group of graduates real life business experience, making them more useful for the small businesses to hire (Cooke and Williams, 2004). The students may be able to identify problems underlying to the symptoms the entrepreneur has identified, and thus provide the firm with a better strategic overview (Sonfield, 1981). The students may also provide network and resource benefits for the SME.

This paper will define the strategic effects as the effects from the program that impact both choices and strategy for the participating firm, through concrete advice and practical assistance.

The third category is the **intangible effects** of the program. Hynes and Richardson (2007) point to the increased level of self-awareness, analytical and critical thinking, as well as improved decision-making skills. Pittaway and Cope (2007) also argue for the opportunity for (two-way) learning to occur as a result of cooperation with students. Sonfield (1981) points out that students do work that the entrepreneur needs to get done, but does not have time to do due to limited capacity and resources. Providing a more academic perspective to strategy may create synergy with the practical outlook of the entrepreneur (Sonfield, 1981). This is all about providing the entrepreneur with a fresh point of view. Gregory (2010) discusses the opportunity for students to reframe the silent narratives of the participating firms. This "new perspective" is reinforced by the work of Mazura and Othman (2011) and Lacho (2009). It is all about the entrepreneur changing their perception of their own firm, based on learning how others see it. The entrepreneurs change their taken-for-granted assumptions of their own firm.

This paper defines intangible effects as the effects from the program that may not be as direct as strategic effects, or as quantifiable as economic effects, but that are still essential in the development of capable entrepreneurs and successful entrepreneurship.

The fourth category is **economic effects**. McMullan et al. (1986) look at value added in monetary terms through; time gained/saved, knowledge gained, information added, and contacts made. These variables can be difficult to measure. McMullan et al. (1986) asked the participating firms to estimate or "guesstimate" these values.

Cooke and Williams (2004) pointed out that businesses save money by utilising low-cost students for projects. Several articles emphasise that the consulting programs enable growth and improve business performance (Pittaway and Cope (2007) and Robinson Jr,1982). Solomon and Weaver (1983) argue that growth can be measured against the national average and that it can be measured through employment growth, net profits, net worth and owner's compensation. This method may be contrasting slightly to the abovementioned method of having owners estimate the effects. Several articles have looked at growth through percentage increase in sales and productivity through sales per employee increase (Robinson Jr, 1982; Elstrott, 1987; Chrisman; 1985). Haines Jr (1988) looks at revenue increase, cost decrease, profit change and employment.

This paper will define the economic effects as the change costs, productivity, profits and revenue of the business that directly come from participating in the program.

An observation that can be made from the summary above is that the economic effects category contains rather dated references (from the 1980s). Strategic and intangible effects are studied in more recent literature. For satisfaction, no such classification can be made. This suggests that focus on the effects of consulting have moved more towards intangible effects in recent years.

Based on the literature above, the four main categories will be the focus of the empirical study made in this paper. This framework is a summary of the measurements used for the different variables:

Figure 2.6.1 Variable Overview

It is at this point important to emphasise that this is an initial classification that requires further empirical validation. It should also be noted that these initial classifications are closely intertwined. For instance, gaining certain knowledge from participation can constitute a strategic effect, in the sense of acquiring a strategically important resource. At the same time, the strategically important resource is intangible, and could be captured in the intangible effects in the form of learning. Acquiring strategically important knowledge can also be a source of satisfaction and entail an economic effect in terms of cost savings or increase in income. These relations are further refined in the causal model presented later, and in the analyses of the empirical data collected.

In addition to the four categories presented above, this paper will add an additional category: **implementation**. This category will be used to evaluate the participating entrepreneurs' implementation of the recommendations made by the student consultants. This category can be argued to be a natural outcome from the other dependent variables. The reason why this variable is included is because it, despite its absence in academic consultancy theory, is very central in the general academic evaluation of consultancy at a professional level (Saremi et al., 2009; Martin et al., 2006; Akkermans, 1995; Turner, 1982).

This paper argues that the dynamics between student consultants and clients share many similar features with professional consultants and clients. As a result, they are likely to face many of the same issues. The literature suggests that a problem may be that many of the recommendations in professional consultancy do not get implemented (Forbes-Insights (2015); Saremi et al. (2009). Martin et al. (2006) suggest that client participation is crucial in implementation, as consultants lack the control to make sure that recommendations are implemented. They further argue that one driver of effective implementation is commitment by clients. They also suggest that clients and consultants working together as a team with a common goal, is an important tool to achieving commitment. A wide body of research supports the notion that a client has to be actively involved and ready to change, otherwise a consulting engagement is not very likely to be successful (Akkermans, 1995, Ginsberg, 1986, Jang and Lee, 1998, Kolb and Frohman, 1970, Rynning, 1992, Turner, 1982).

For the purpose of this paper, implementation will be defined as the implementation of the recommendations made by the participating students as the output of the programs.

2.6.2 Independent Variables

This section will summarise the independent variables found in the literary review. Most of the research was descriptive and did not include independent variables. However, Weinstein et al. (1992) attempted to uncover a causal relationship between a set of independent variables and satisfaction. The independent variables they used are as follows:

- Entrepreneurial characteristics (gender, ethnicity, age, education, years of business experience).

- Business characteristics (age of firm, type of firm (industry), number of employees, legal structure).
- Student characteristics (professionalism, business knowledge, practicality of recommendations, class standings, size of student team, team grade of report.

Sang Suk and Osteryoung (2004) performed an exploratory study, and uncovered that U.S. university business incubator managers found two key significant success factors: goal (clarity, achievement) and operations strategy (concreteness, realization). These categories will be used as a basis to develop the independent variables in the hypotheses.

Education level of the entrepreneur will be used as a control variable, rather than an independent variable. A rigorous study (Robinson and Sexton, 1994:154) came to the following conclusion:

"…higher levels of education increase both the probability of becoming self-employed and the success of individuals in that sector…"

This is important because it emphasises that the success the companies experience is not solely based the effects of the program.

2.7 Variable Selection: Independent Variables

This section will present the three selected independent variables that will be used in the regression analyses.

One variable will be the **perceived professionalism** of the students, by the participating firm. Based on the literary review, this variable could be important in the context of strategic, intangible and economic effects, even though Weinstein et al. (1992) did not find it significant in their analysis. This paper has a larger set of dependent variables than Weinstein et al. (1992) and hence the findings may differ. Another reason for including this variable is that it includes a slightly wider array of elements than that which is proposed by Weinstein et al. (1992). Other research that conceptualise professionalism in many ways incorporates "business knowledge" in the measurements of perceived professionalism (Bloland and Templer, 2004, Abbott, 1988), which Weinstein et al. (1992) found to have an effect on

satisfaction. Since this paper is measuring satisfaction in a more detailed manner, business knowledge is now an item in the satisfaction variable.
The standard way of measuring professionalism is to take a list of characteristics and assess how many of these traits the individual possesses (Goode, 1957). Bloland and Templer (2004) argue that some of the most important characteristics of professionalism are:

- Professional expertise
- Service orientation
- Displaying concrete knowledge relevant to the assignment
- Level of income
- Years of experience
- Education and training
- Adhering to a code of ethics

Bloland and Templer (2004) further emphasises that the list of traits needs to be flexible in terms of characteristics when measuring professionalism, in order to gain reasonable answers to the research question. For instance, when measuring the professionalism in students, it may be necessary to exclude a few characteristics that pertain more to professionals in employment: e.g. income, years of experience, etc. (op. cit.).

According to Abbott (1988) the ability to use theory to redefine problems and tasks is what separates professions from non-professions in marketing.
Roberts and Dietrichs (1999) separate between economic and sociological aspects in defining professionalism. On the economic side, it looks at effectiveness and confidence in solving the task given. On the sociological side, it is particularly focused on ethics. For the program in question in this paper, the ethical side will not be measured, as it is difficult for the entrepreneur to assess the ethical status of the participating individuals based on a few meetings in a university context. Furthermore, it is doubtful that this is what Weinstein et al. (1992) were examining in their research. For the purpose of this paper, professionalism will be measured based on the perception of the entrepreneur.

Based on the literature, the second independent variable will be **commitment of entrepreneurs**.
Ketchand and Strawser (2001) show how commitment is a critical factor in order for organisations to succeed. Even though the study was conducted on employee commitment in

organisations, this paper still finds it applicable. It does however acknowledge the limitations to this comparison that come from the consulting groups being short term and organisations being long term.

Meyer and Allen (1997) propose a Three Component Model of Commitment as a way of determining commitment. These components are affective, normative and continuance commitment. Affective commitment is the emotional attachment to the organisation. Their research suggests that employees, who felt an affective commitment, identified with, got involved in, and felt more devoted towards their organisations. These findings are also supported in the literature (Mowday et al. (1979) Meyer and Allen (1997) .
Normative commitment is when people feel pressured or obliged to be part of an organisation (Meyer and Allen, 1997). This is considered to be a negative motivational factor. Continuance commitment comes from the awareness of the costs of leaving the organisation. Employees often stay with an organisation if the costs of leaving are too high (op. cit.). For the firms participating in the educational programs examined in this paper, the most dominant cost would be financing. One of the instigators of the program (Innovation Norway) is also a large benefactor of SMEs. Disfavour here could, in the entrepreneurs mind, potentially cost them financing opportunities. Another cost could be missing out on the opportunity to utilise the networks of Innovation Norway and UiA.

This paper will add an additional element that can reflect the level of commitment of the entrepreneur, the amount of time they have set aside or spent on the project. This element is the ideological support aspect. Donaldson (1982) introduced the *social contract theory*, which postulates the notion that societies allow firms to take form and operate, thus the companies have an ethical duty to give back or increase the social welfare to the society, which allowed and nurtured their existence. The paper would argue that if the participants were ideologically normalised with the social contract theory, they would thus be more positive towards the program.

The third variable will be the **perceived practicality of the recommendations**. This is a variable that was initially examined by Weinstein et al. (1992). They found this to be a significant independent variable to the dependent variable: satisfaction. This variable describes how understandable and usable the entrepreneur perceives the recommendations

made by the students to be. It also incorporates the perceived complexity of the recommendations (cit. op.).

2.8 Hypotheses and Dependent Variables

The upcoming sub-sections will present expectations, background and hypotheses for the dependent variables. The dependent variables that will be used in order to answer the research question are: economic effects, strategic effects, implementation, intangible effects, and satisfaction, which were all presented in section 2.6.

2.8.1 Satisfaction

Previous research on satisfaction was presented in section 2.6. The items suggested by previous literature were as presented in figure 2.6.1.

This variable is very important as it could be argued to be an excellent measure of the sentiments the participants have towards the program (Gregory, 2010; Brindley and Ritchie (2000).

All of the previous research on the field found that, a majority of the participants in the student consultancy programs they examined were satisfied with the experience (Gregory, 2010; Brindley and Ritchie (2000). The only former literature that did causal research in this area was Weinstein. et. al (1992). They found that there was a significant relationship between satisfaction and perceived student characteristics. They found no significant relationships between entrepreneurial characteristics and satisfaction.

This paper will first present descriptive statistics reflecting the distribution of entrepreneur's sentiments with respect to all expected outcomes from program participation. Next, the paper will present an analysis of the potential effects the independent variables, presented in section 2.7.1, may have on satisfaction. Based on this, a few expectations should be presented:

- This paper suggests that the entrepreneur's perception of students professionalism will affects their level of satisfaction. One reason for
  this may be that students' professional behavior in a business context will give
  the entrepreneurs a feeling that they are in good hands, that their venture is taken

seriously, and, in turn, make them more confident with the contribution made by the students. This could influence their satisfaction with the program.

- This paper also suggests that the effort the entrepreneurs put into the program will have an effect on how satisfied they are with it. It can be suggested that through high levels of commitment entrepreneurs become stakeholders in the success of the program in which they are engaged, and therefore become more satisfied with the outcome.
- Finally, this paper also suggests that the perceived practicality of the recommendations made by the students will also affect the entrepreneurs' levels of satisfaction. The recommendations are the results that the students present at the end of the program. This is one of the 'carrots' that have enticed the entrepreneurs to participate in the program, and it is what they will potentially end up using to improve or develop their company. This paper would therefore argue that practical recommendations will be easier to understand, follow and act upon, and hence also important in determining how satisfied the entrepreneurs were with the program.

Based on the expectations presented above, the following hypotheses have been developed:

Hypotheses - Satisfaction	
Hypothesis 1a	The higher level of perceived professionalism of the students, the higher the level of participating firm satisfaction.
Hypothesis 2a	The higher the commitment of the entrepreneur, the higher the level of participating firm satisfaction.
Hypothesis 3a	The higher the practicality of the recommendations, the higher the level of participating firm satisfaction.

Table 2.8.1 Hypotheses Satisfaction

2.8.2 Strategic Effects

The previous literature with regards to strategic effects was presented in section 2.6. The items suggested by previous literature were as presented in figure 2.6.1.

Measuring strategic effects of the program on the companies/entrepreneurs that participated is very important due to the fact that these programs are strategy based and the contribution of

the students to the companies are a set of strategic recommendations. Measuring what strategic effects these recommendations may have had is therefore essential.

Previous research on strategic effects was all descriptive or conceptual and all of it found or argued that the participation in student consultancy programs yielded strategic benefits for the participating companies/entrepreneurs (Sang Suk and Osteryoung (2004).

This paper will (in addition to looking at the variable based on descriptive statistics) run a causal analysis to examine what effect the independent variables presented in section 2.8.1 have on perceived strategic effects. Based on this, a few expectations should be presented:

- This paper suggests that the perceived professionalism of the students is expected to have an impact on the entrepreneur's perceived strategic effects of the program. How professional the students appear in the eyes of the participating firm may impact how much faith they put in the recommendations and how much they trust the students themselves. This may influence whether they see recruitment opportunities in the students or not and it may influence how good he feels that the strategic advice is.
- Furthermore, the paper suggests that the commitment of the entrepreneur to the program is expected to have an effect on the strategic effects of participating. This is mainly due to the notion that committed involvement in the program ensures focus on issues that are strategically important to the entrepreneur, while avoiding distractions and diversions, and accordingly come up with insights and recommendations of strategic value to the entrepreneur. Without such commitment, students may easily identify other aspects that may be relevant but less strategically important for the entrepreneur. Another reason for this that should be noted is that that participation in the program is a two way street and to truly benefit from the program, it could be argued that the participating firms have to fully commit their time and effort to achieving the desired synergy. This concept of synergy is the basis of much research into teamwork and is argued to be the key to productive and creative success in teamwork (Segal-Horn and Faulkner, 2010, Sonfield, 1981).
- Finally, the practicality of the student recommendations is the final variable that this paper suggests could influence the strategic effect the companies/entrepreneurs achieve from participating. In this case the paper suggests that practical recommendations implies identification of concrete resources and specific ways to

deploy and configure them, both of which are fundamental to strategic approaches the firm needs to adopt and follow.

Based on the expectations presented above, the following hypotheses have been developed:

Hypotheses - Strategic Effects	
Hypothesis 1b	The higher the levels of perceived professionalism of the students, the higher the positive strategic effects experienced by the firms who participate in the program.
Hypothesis 2b	The higher levels of commitment of the entrepreneur, the higher the level of strategic effects experienced by the firms who participate in the program.
Hypothesis 3b	The higher the practicality of the recommendations, the higher the level of strategic effects experienced by the firms who participate in the program.

Table 2.8.2 Hypotheses Strategic Effects

2.8.3 Intangible Effects

The previous literature with regards to intangible effects was presented in section 2.6. The items suggested by previous literature were as presented in figure 2.6.1.

As mentioned in section 2.6, the intangible effects of student consulting programs have received more attention in the most recent articles. This may to some extent be due to the fact that the more obvious effects are more likely to be measured at the earlier stage of the research and intangible effects may be a more "in depth" variable as far as effects of these programs go. It may also be because variables like strategic and economic effects are very central in general literature in business and entrepreneurial education. Regardless of the reason, this paper would argue that the intangible effects are essential in order to get a full overview of the effects that the programs have. It provides the paper with the width to fully cover the picture of what effects the programs may have on the participants.

Previous research on intangible effects was all descriptive or conceptual and all of it found or argued that the participation in student consultancy programs yielded benefits of an intangible nature for the participating companies/entrepreneurs (Hynes and Richardson (2007).

This paper will (in addition to looking at the variable based on descriptive statistics) run a causal analysis to examine what effect the independent variables presented in section 2.8.1 have on perceived intangible effects. Based on this, a few expectations should be presented:

- The perceived professionalism of the student is expected to have an impact on the intangible effects that the participating firms experience from participating in the program. This paper would argue that if the students appear professional, then the participating firms are more likely to listen to them. Listening to the students will be the essence of reframing silent narratives, learning, improving analytical skills, improving decision making skills and improving analytical skills of the entrepreneur. Since these are the building blocks of intangible effects, this paper would therefore suggest that if the students are perceived to be professional, they are more likely to be listened to and as a result be able to affect the participating firms in a way that will provide intangible effects.
- The commitment of the entrepreneur is also expected to have an impact on perceived intangible effects. This is (as mentioned in previous parts of section 2.8) due to the expected need for the participating firms to have a good attitude towards the program in order to fully reap the benefits of the program. In simple terms, those who are committed to learning will be more likely to learn. This simply means that, in order to be able to take in learning outcomes that the program has to offer, the participating entrepreneur needs to be committed to the notion that the program provides valuable learning.
- The final independent variable that is expected to influence the perceived intangible effects is the practicality of the recommendations that the students produce in the program. The practical recommendations can be viewed as a form of concrete examples in learning processes, improving learning processes beyond theoretical understanding of issues by using concrete examples on how they can be addressed. Hence, how practical the recommendations are is expected to influence the extent to which the firm experience intangible effects.

Based on the expectations presented above, the following hypotheses have been developed:

Hypotheses – Intangible Effects	
Hypothesis 1c	The higher levels of perceived professionalism of the students, the higher the levels of intangible effects experienced by the firms who participated in the program.
Hypothesis 2c	The higher levels of commitment of the entrepreneur, the higher the levels of intangible effects experienced by the firms who participated in the program
Hypothesis 3c	The higher levels of practicality of the recommendations, the higher the levels of intangible effects experienced by the firms who participated in the program.

Table 2.8.3 Hypotheses Intangible Effects

2.8.4 Implementation

This variable has been developed in order to see if the effects of participating in the business can further influence the choice of the participating firms to implement the recommendations that were presented by the students at the end of the program.

Much of the literature on consulting in general argues that a huge issue with regards to consulting in companies is that the recommendations never get implemented fully (or at all) (Forbes-Insights, 2015, Saremi et al., 2009). This means that a very interesting aspect to look at for this paper is which effects have an influence on whether or not the participating firms implement the recommendations.

The body of literature (on student consulting programs) presented in section 2.6 did not focus on implementation. Implementation of recommendations have been the focus of much literature on project management and also of some literature on consulting (Milan, 2002, Karlsen, 2013)

This paper will look at what effects of the consultancy programs that have an effect on whether or not the participating firm decides to implement the recommendations. The expected findings from the analyses are:

- The satisfaction of the participating firms has an effect on whether or not they decide to implement the recommendations. This is merely based on the notion that if the

participating firms are satisfied with the way in which the program has contributed to their business, they will be more inclined to implement the ideas in the company.

- The strategic effects experienced by the participating firms are likely to affect their choices regarding implementation of the recommendations. This basically means that the participating firms who have experienced strategic effects are more likely to choose to implement the ideas that the students presented. This could be argued due to the idea that acquiring strategic resources (such as relevant knowledge) makes implementation of recommendations easier than in the case such resources are not acquired. This means that practical recommendations make implementation easier and the entrepreneur is more likely to implement the ideas if doing so is not too difficult.
- The last effect expected to influence implementation is intangible effects. If the entrepreneurs feel gain new skill sets, learn new things or reframe their narratives from participating, this paper would suggest that they are more likely to implement the recommendations. Learning and understanding something new may enhance willingness to implement it, by way of curiosity or interest of trying something new to achieve specific goals.

Based on the expectations presented above, the following hypotheses have been developed:

Hypotheses – Implementation	
Hypothesis 4	The higher the level of participating firm satisfaction, the higher the levels of implementation of recommendations.
Hypothesis 5	The higher the level of strategic effects, the higher the level of implementation of recommendations.
Hypothesis 6	The higher the level of intangible effects, the higher the level of implementation of recommendations.

Table 2.8.4 Hypotheses Implementation

2.8.5 Economic Effects

The final element in the build-up of this paper is the way in which the paper examines the economic effects. The economic effects will build on the all of the dependent variables above. This will allow the paper to determine which effects are more likely to improve the perceived economic effects of participation.

Previous research on strategic effects was all descriptive or conceptual and all of it found or argued that the participation in student consultancy programs yielded economic benefits for the participating companies/entrepreneurs (McMullan et al.,1986; Cooke and Williams, 2004; Pittaway and Cope, 2007; Solomon and Weaver, 1983; Robinson et al., 2010; Elstrott, 1987; Chrisman et al., 1985; Haines Jr, 1988).

This paper will analyse the variable both in a descriptive manner and a causal manner. The latter will be based on an expected relationship between the four variables presented in the previous section and the economic effects from the program. The reason why the economic effects have been placed as a dependent variable to all the other variables presented in the previous section is that the paper suggests that these are the cause of economic effects. The justifications of the suggested causal relationships are presented below:

- This paper suggests that satisfaction is expected to influence the economic effects that the participants perceive from participating in the program. Satisfaction with the program makes it easier for entrepreneurs to acknowledge positive economic outcomes when they do occur. Dissatisfaction with the program makes it easier to not associate positive economic effect with participation, even when they do occur.
- Strategic effects are expected to influence the economic effects. This is grounded in the idea that small business units, which receive an upgrade or leverage in their operation, planning procedures, and networking will become more competitive in the market. This will make them able to seize opportunities that they previously did not see. In accordance with the findings of McMullan et al. (1986), where strategic effects had a considerable increase in value added, this paper therefore expects the relationship to be positive between strategic and economic effects.
- Intangible effects are expected to influence economic effects. This is based on the idea that firms that receive increased intangible effects are better equipped to improve efficiency. In accordance with the findings by Pittaway and Cope (2007), participation enables learning and economic growth for the firms. This could provide them with additional time or money. It could also help them make profitable decisions by having leaner processes, or even changing the way they do things because of new narratives and analytical skillsets. Increase in intangible effects is expected to increase the economic effect experienced by the firm.

- Implementation of recommendations is expected to influence the economic effects. This is based on the premise that entrepreneurs who have implemented the recommendations must have done so because they believe it would fit with the company's market and financial situation. Hence, having an analytically based plan that is backed by upper management is expected to yield positive economic effects. Implementation of recommendation is necessary for it to be possible to evaluate any economic effects of participation in the program. If recommendations are not implemented there is no basis for economic effects (positive or negative) to occur at all.

Based on the expectations presented above, the following hypotheses have been developed:

Hypotheses – Economic Effects	
Hypothesis 7	The higher level of participating firm satisfaction, the higher the levels of economic effects.
Hypothesis 8	The higher level of strategic effects, the higher the levels of economic effects.
Hypothesis 9	The higher level of intangible effects, the higher the levels of economic effects.
Hypothesis 10	The higher level of implementation, the higher the levels of economic effects.

Table 2.8.5 Hypotheses Economic Effects

These hypotheses will be tested in two separate regression analyses. The first will test H7, H8 and H9. The second will test only H10.

2.9 Conceptual Framework

Based on the variables identified above, the following conceptual framework has been developed.

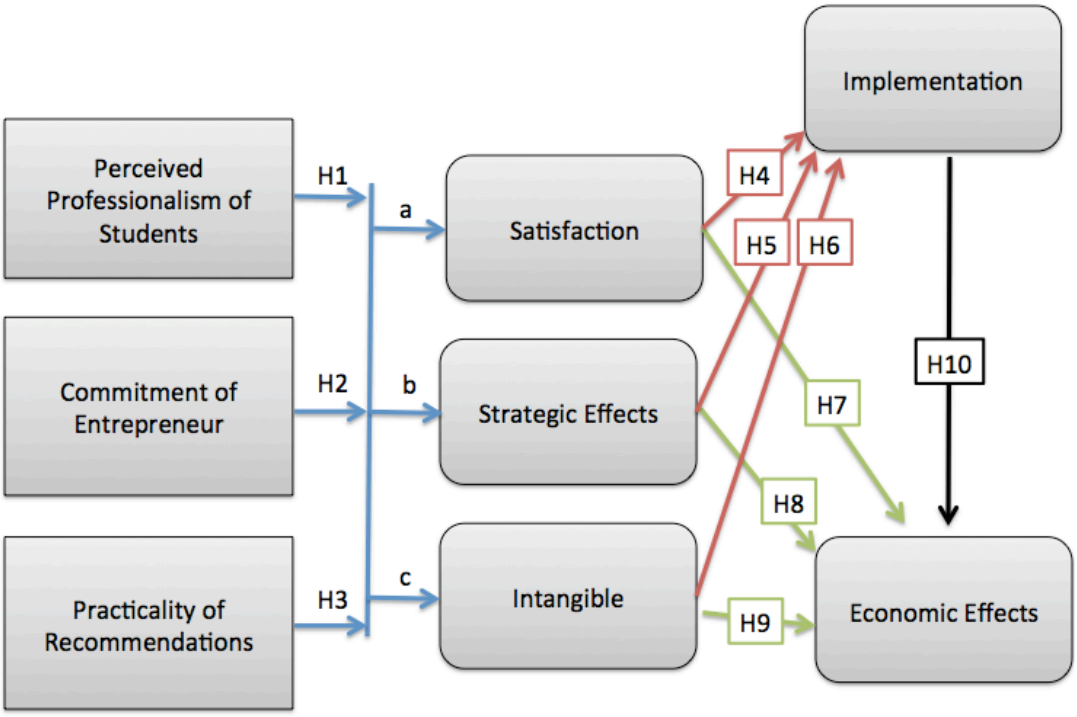


Figure 2.9 Conceptual Framework

The model has three independent variables, four variables that are dependent in their own right and independent variables for other variables and one variable that is solely a dependent variable. Despite being quite complex, this framework is expected to provide a good overview of the effects of student consulting on participating companies.

Chapter 3 Research Methodology

This section will present the research methodology used in this paper. The section will start by presenting the research design, methodological approach and context of study. Following this will be sections on data sources and data collection. The remaining sections will take the reader through variables, measurements and the questionnaire, validity, population, and sample as well as the data analysis methods.

3.1 Research Design and Methodological Approaches

Vaus (2001) argues that choosing the correct type of research design is fundamental for a study. A research design is not just a work plan, the function of the research design is to ensure that the evidence obtained enables the researcher to answer the initial question as unambiguously as possible (Vaus, 2001). Zikmund et al. (2010) argue that the researcher, after formulating their research problem, has to develop a research design. This research design is much like a blueprint on how the data is to be collected and analysed. The researcher also has to determine the information sources, design technique, methodology for sampling, and the cost of the research which is to be executed (op. cit.).

Exploratory research is conducted to clarify ambiguous situations (Zikmund et. al, 2010). This type of study does not provide conclusive evidence, but is a starting point for further study. It is a building block from which more in-depth studies can be undertaken to provide the researcher with more conclusive results (op. cit.). Hence, before inference of a causal relationship can be established, the researcher must undertake such a preparatory research (op. cit.). The researcher will then have a good understanding of the phenomena, which is to be studied. In other words, Zikmund et al. (2010) argue that exploratory research should be conducted before any surveys are made, to ensure that the questions are to the point and are aligned with the thoroughly evaluated and formulated research question. Thus, collecting the precise data needed for the study.

Causal research requires the research question to be clearly defined before the study can proceed (Zikmund et al., 2010). In establishing the inference, hypotheses have to be tested, and strict measures must be followed to rule out any possibility of contamination of the samples through collection, or in the treatment of the data when being analysed. This type of

research is highly structured and has to follow strict procedures and processes. Causal research can be extremely useful because it can explain why certain effects take place (op. cit.).

The majority of the papers presented in the literary review are exploratory research. They have developed a general map of effects from the programs they examine. This paper will utilise the theory development presented in these papers to develop causal research. It will run a descriptive and a causal analysis to both determine the effects the program had on the participating companies and to uncover explanatory (independent) variables and analyse their effect on the dependent variables through hypothesis testing.

3.1.1 Methodological Approach

The first choice facing the researcher is one between qualitative and quantitative methods. Kathori (2004) distinguishes between qualitative and quantitative research in the following way:

"Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind."

Bryman and Bell (2003:302) present a framework, which further compares the traits of the two types of research methods:

Quantitative	Qualitative
Numbers	Words
Point of view of researcher	Point of view of participants
Researcher distant	Researcher close
Theory testing	Theory emergent
Static	Process
Structured	Unstructured
Generalisation	Contextual understanding
Hard reliable data	Rich deep data

Macro	Micro
Behaviour	Meaning
Artificial Setting	Natural setting

Table 3.1.1 Quantitative Vs. Qualitative Research (Bryman and Bell, 2003:302)

"Qualitative questions require qualitative methods and data to answer them, quantitative questions require quantitative methods and data to answer them" (Punch, 2009:3)

In order to best determine the approach suitable for this paper, it is therefore necessary to look at what this paper aims to uncover. With this in mind, we can again consider the research question for this paper:

"What are the effects of university business development programs on small firms that participate in them?"

Taking this into the context of the literary review, one can see that the effects have been divided into measurable items, which can generate hard reliable data. In order to be able to generalise, it will have to be structured and from a macro perspective. It will test based on the theories presented in the literary review. Based on the required characteristics to answer the research question, one can determine that a qualitative approach is most suitable in this context. The kinds of generalisations that can be made are determined by the size of the sample and the size of the population one wishes to generalise for.

Creswell (2013) distinguishes between two types of quantitative research: non-experimental and experimental. The main distinction between the two is the researcher's ability to manipulate independent variables. Experiments occur under controlled conditions and use randomised or non-randomised designs. Within the non-experimental designs, Creswell (2013) emphasises surveys as a typical quantitative non-experimental design. The intent of surveying is to generalise from a sample to a population. This paper will utilise this, and survey former participants in International Laboratory and Gründerlab.

Other methodological aspects that need to be considered are relevance, quality, and timeliness.

Data has to be relevant to what is measured, as there is a danger for irrelevant data seeping into the study. Zikmund et al. (2010) state that "Relevant data are facts about things that can be changed, and if they are changed, it will materially alter the situation".

It is important to attain data that represent reality as faithfully as possible. These data are referred to by Zikmund et al. (2010) as high-quality data.

The data must be current enough for it to still be relevant, out-of-date information can lead to poor decisions, especially when it pertains to essential business information (Zikmund et al., 2010).

3.2 Context of Study

This paper will study the effects of practical entrepreneurship and strategy programs on businesses that participate as clients. These clients are usually entrepreneurs in SMEs. The context is the University of Agder in Norway and the two study programs that run in conjunction with Innovation Norway. The first program, International Laboratory was established in 2004. The second program, Gründerlab, was established in 2005. Both programs are still running.

The structures of the programs are quite similar. The idea is that a group of students meet an entrepreneur with a business or an idea. The students then assist the entrepreneur in developing a business plan. In the end of each course, the students' business plans are presented in a competition where the team with the best contribution to their company is awarded.

Gründerlab focuses more on the initial stage of the businesses and on developing a general business plan. The course has a span of one semester, with the business plan and an exam being the primary evaluation criteria of the students.

International Laboratory focuses on international expansion, and includes a more wide variety of businesses in different life-cycle stages. Some are recent start-ups (or prospective start-ups) with born global characteristics. A list of the participating firms can be found in Appendix 3.

Others are companies that may have depleted a lot of the home market (usually niche businesses) and aim to go abroad and expand to new markets. Like Gründerlab, the course has a span of one semester and the students are evaluated based on the business plan and an individual exam. The business plan used here is also more of a guiding business model as a foundation for building a strategy.

In total from the two programs, 128 businesses have participated. This paper will use data from all years the program has run. Participants of a similar course in the university were used for the pilot survey, "Gründerlab for turisme og opplevelser". This course is almost identical to the two courses studied in this paper. The only difference is the focus on entrepreneurs within tourism rather than a general focus on entrepreneurs.

This paper has not been able to uncover any similar studies performed in Norway and only a handful of studies globally that has covered the effect similar programs have on the businesses who participate. The studies that were found have been included in the literary review.

3.3 Data Sources

The analysis in this study is based on the primary data collected from the survey. Items with variables that expect to overlap (both internally and between variables) have been removed from the data sets, before running statistical analyses.

In addition to the primary data mentioned above, UiA also provided some data. This primarily pertains to names of companies, years they participated, general information about the programs etc.

3.4 Method for Data Collection

There are several ways of collecting the appropriate data, each differ considerably in costs, time and other resources.

Internet surveys are self-administered questionnaires on a Website. The respondents answer the questions by clicking on the options displayed to the questions on screen. These surveys

are quick to administer, and quick to distribute. Furthermore, there are no mailing, paper, or data entry costs. Surveys that would have taken several weeks to gather can now be collected within a week or less (Zikmund et al., 2010).

Telephone interviews involve contacting the respondents by telephone, and are often utilized when there is a shortage of time (Kothari and Garg, 2014). It provides the participating firms with the questions asked by a researcher (or assistant) over the phone and tend to have a better response rate (Zikmund et al., 2010).

Data collection methods can create certain response biases that make the data less reliable (Wiseman, 1972) . In order to avoid response biases related to collection method, this study uses a *data collection procedure* that combines both of the abovementioned methods. The way in which this was performed was through calling each potential respondent in the sample and giving them the option of taking the survey by telephone or taking the survey online. This was made easier by the fact that the survey is not anonymous.

All the possible respondents, which had available contact details, were telephoned systematically. First International Laboratory participants were contacted, and then Gründerlab participants, in chronological order. The initial contact sessions started from 8 a.m. until 4 p.m., and contact with respondents was not initiated after 4 p.m. This limit was set in case of possible irritation from the participants, which could lead to biased answers or refusal in answering the survey. However, many respondents requested to have the phone surveys in the evening, some of them as late as 9 p.m. and 10 p.m. The researchers of course accommodated these requests. The whole collection process took 3.5 weeks.

Initially, the participants that were contacted over the phone were introduced to the study. Thereafter, it was verified they had participated in one of the programs. They were then given the opportunity to take part in the survey over the phone or through an online questionnaire. A few participants were available and ready to partake immediately. A majority needed to schedule for when they were available for the approximately 20-30 minutes it took to answer the survey. Unfortunately, some participants asked to reschedule telephone-appointments for the survey but later did not answer the phone, respond to messages left on the answering machine or reply to text messages sent. Contact was attempted several times.

Many of the entrepreneurs have hectic and somewhat unpredictable days, and for a lot of the respondents, rescheduling of the telephone surveys had to be done several times before a sample could be collected.

A few of the respondents that opted for the online survey completed it fairly swiftly. The majority of the online respondents required reminders through text messages and telephone calls. Some required multiple reminders.

Others could not be reached by telephone. They were attempted to be contacted four times each, and messages were also left on their answering machines. This unfortunately evoked no response. Finally, information was sent to these participants about the study on the email addresses, which were registered, and the option to participate online was given. Two of these participants completed the online survey. Two reminders were sent out, which did not result in more responses.

Two respondents refused to participate, one of them felt it was too long ago to remember (two years) and therefore not of interest. The second refusal was due to the fact that the participant had shut down the company and lost all interest in its involvements.

3.5 Variables, Measurements and the Questionnaire

This section will present the questions asked in the questionnaire categorised by the variables it aims to measure. The questionnaire was created in both in Norwegian and in English. Only the latter is presented in the paper (the Norwegian version can be found in Appendix 2)

3.5.1 Measurement and operationalizing

Binary variables are in only two categories, 0 and 1 (Field, 2009). This was utilised mainly for yes/no questions in the survey.

Nominal variables cannot be ordered after rank, it can be the names of different alternatives answers (Greener, 2008). If two things are equivalent in some aspect and given the same name, they are nominal variables. They are however not applicable to arithmetic since they consist of names (Field, 2009).

Ordinal variables tell not only that something has occurred, but also what order they have occurred. However, the information of value difference between variables is not given (Field, 2009). These can be rank arranged, but the space between the variables is not equal along the set (Greener, 2008). This was used to a large extent in the survey.

Interval variables have equal intervals between the scale of the measurements (Field, 2009). There are intervals of space between each variable which are fixed (Greener, 2008). This was used on a few questions in the survey.

Ratio variables are the same as interval variables, but they have true and meaningful zero points and make logical sense (Field, 2009). This was used on a few questions in the survey.

Summated (or Likert-type scales) consist of a number of statements, which express a favourable or unfavourable attitude towards a topic or object the respondent is asked to respond to. Each response is allocated a numerical score, indicating its level of favourableness or unfavourableness. The total scores given by the respondents are summed to measure their attitudes towards the issue. The most common summated scale is the one devised by Likert (Kathori, 2004). The middle option is neutral, with gradually increasing levels of favourableness and unfavourableness on each side (op. cit.). The measurement used in the questionnaire was mostly an ordinal 7-point Likert scale. There were also some yes/no questions, written response, numeric response questions and multiple-choice questions.

Operationalisation is to measure concepts through methodological means; a researcher needs to identify scales that correspond to the variance in the concepts. The allocation of such a scale for the use of capturing the variance in responses is known as operationalization (Zikmund et al., 2010).

To a great extent, the operationalizing of the variables for this paper was done based on the literary review and has already been presented in section 2. What remains is to present the final questions based on this operationalization, as well as formulating a method for the final building of the variables based on statistical analysis. The former will be presented in the remaining part of section 3.5 whilst the latter will be presented in 3.8 (data analysis).

3.5.2 Initial section

The first section of the questionnaire maps out the companies and the entrepreneurs. Most of this has been used as general information. These questions were as follows:

What was the name of your company/concept when you attended INT LAB/Gründerlab?

_____

_____

Describe the type of product/service/concept you wanted the student group develop a plan for?
(2 lines maximum)

_____

_____

What was the status of the organisation/concept when you participated in INT LAB/Gründerlab?

(1) ❑ Idea Only
(2) ❑ Registered for-profit enkeltmannsforetak
(3) ❑ Registered for-profit aksjeselskap
(4) ❑ Non-profit
(5) ❑ Other

Figure 3.5.2a Questionnaire - Initial Company Information

The entrepreneur behind the concept is

(1) ❑ Male
(2) ❑ Female
(3) ❑ Multiple participants

The entrepreneurial team behind the concept is mostly comprised of

(1) ❑ Males
(2) ❑ Females
(3) ❑ Equal Mix Males and Females

Figure 3.5.2b Questionnaire - Initial Entrepreneur Information

3.5.3 Dependent variables

A variable that is expected to be an effect is called a dependent variable, because the value of this variable depends on the cause (Field, 2009). Hair et al. (2010) describes a dependent variable as the presumed effect of or response to a change in the independent variable(s). The paper has five dependent variables:

- Satisfaction
- Strategic Effects
- Intangible Effects
- Implementation
- Economic Effects

The upcoming sections will present the questions constructed for the questionnaire in order to determine the items for each respondent.

3.5.3.1 Satisfaction

Satisfaction was measured in the questionnaire on a 7-point Likert scale (from strongly disagree to strongly agree) using the following question(s):

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
Given the choice, I would use the program again	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I would recommend the program to others	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The project was a good use of my time	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I think I did the right thing when I joined this program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The program was something we needed at the time	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.3.1 Questionnaire - Satisfaction

The questions above were based on the previous research presented in sections 2.6 and 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature (Gregory, 2010; Brindley and Ritchie, 2000; Burr And Solomon, 1977; Weinstein et. al., 1992; Romney and Cherrington, 1993; Kiesner, 1987; Lacho, 2009; Domouchel, 2010).

3.5.3.2 Strategic Effects

The strategic effects were measured in the questionnaire on a 7-point Likert scale (from strongly disagree to strongly agree) using the following question(s):

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
Participating the in program has contributed in quicker development of my company/concept	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The information from the research the students performed was used by our company	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I identified underlying challenges with my company that I was not aware of before entering the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Participating in the program helped us gain useful contacts and network access	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I gained access to useful resources from participating in the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Following our participation we have involved some of the students in our company activities after the program was finished	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Following our participation we have decided to hire one of the students to our company	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.3.2 Questionnaire - Strategic Effects

The questions above were based on the previous research presented in sections 2.6 and 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature (Sung Suk and Osteryoung, 2004; McDougall, 2014; Hynes and Richardson, 2007; Weinstein et. al., 1992; Lacho, 2009; Chan et. al., 1994; Pittaway and Cope, 2007; Cooke and Williams, 2004; Sonfield, 1981).

3.5.3.3 Intangible Effects

The intangible effects were measured in the questionnaire on a 7-point Likert scale (from strongly disagree to strongly agree) using the following question(s):

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
My analytical skills were improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My abilities for critical thinking were increased	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My decision making skills have improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My abilities to analyse markets and segments have improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My understanding of strategic options for my firms have improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My understanding of business planning processes has improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My perception of elements in my business that I used to take for granted was changed.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The program was a valuable learning experience	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.3.3 Questionnaire – Intangible Effects

The questions above were based on the previous research presented in sections 2.6 and 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature (Hynes and Richardson, 2007; Pittaway and Cope, 2007; Sonfield, 1981; Gregory, 2010; Mazura and Othman, 2011; Lacho, 2009).

3.5.3.4 Implementation

Implementation was measured in the questionnaire on a 7-point Likert scale (from strongly disagree to strongly agree) using the following question(s):

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
We have fully implemented the recommendations of the students projects	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
To a large extent, we have followed most of the recommendations made in the student´s project	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
We have made effort in implementing as many of the students´ recommendations as we could.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
We have done our best to implement as many of the students´ recommendations as possible.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 5.5.3.4 Questionnaire – Implementation

The questions above were based on the previous research presented in sections 2.6 and 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature (Martin et al., 2006, Akkermans, 1995, Ginsberg, 1986, Jang and Lee, 1998, Kolb and Frohman, 1970, Rynning, 1992, Turner, 1982).

In the end, this paper decided to utilise only the first question as a representation of the variable for the actual analysis. The reason for this is that this particular question works best with the hypothesis in the paper. It is also due to some of the feedback experienced during the pilot, which pointed out that some of these questions were too similar.

3.5.3.5 Economic Effects

The economic effects were measured in the questionnaire on a 7-point Likert scale (from large decrease to large increase) using the following question(s):

Please indicate on the scale how you perceive that the following elements have changed (or not changed) as a result of participating in the program and/or implementing the recommendations that emerged from it.

	Large Decrease	Decrease	Slight Decrease	Neither Decrease nor Increase	Slight Increase	Increase	Large Increase
Number of employees	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Profit levels	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Sales volumes	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Cost levels	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Market share	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Number of customers	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Number of business partners	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.3.5 Questionnaire - Economic Effects

The questions above were based on the previous research presented in sections 2.6 and 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature (McMullan et. al., 1986; Cooke and Williams, 2004; Pittaway and Cope, 2007; Solomon and Weaver, 1983; Robinson Jr., 1982; Elstrott, 1987; Chrisman, 1985; Haines Jr., 1988).

3.5.4 Independent variables

A variable that is expected to be the cause is known as an independent variable because its value does not depend on any other variable (Field, 2009). Hair et al. (2010) describes an independent variable as the presumed cause of any changes in the dependent variable.
This paper has three independent variables:

1. Perceived Professionalism of Students
2. Commitment of Entrepreneur
3. Practicality of Recommendations

As the conceptual framework suggests, the analysis in this paper does use some of the variables presented in the previous section as independent variables for some of the regression analyses.

The following sections will present the questionnaire build-up for the independent variables.

3.5.4.1 Perceived Professionalism of students

For the purpose of this paper, the variable of professionalism is measured based on the perception of the entrepreneur. This means that in order to measure this in a good way, the criteria pointed out above needs a) to be relevant to the purpose and task of the research and b) to be understandable and possible to answer for the respondents. The elements included in uncovering professionalism are:

- Professional expertise
- Service orientation
- Display theoretical knowledge applicable to the assignment
- Ability to reframe tasks based on professional knowledge
- Performed the task in an effective way
- Displayed confidence in solving the task

Professionalism was measured in the questionnaire on a 7-point Likert scale (from strongly disagree to strongly agree) using the following question(s):

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Disagree
The students executed the task in a professional way	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students had a service oriented attitude	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students displayed theoretical knowledge applicable to the assignment	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students were able to reframe tasks based on professional knowledge	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students effectively performed the tasks they were given	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students displayed confidence in solving the task	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.4.1 Questionnaire – Perceived Professionalism of Students

From the questions presented above, only the first question (which is called professional expertise) was used in the regression analysis. The decision to use only one item (and the selection of which item to use) was decided in cooperation with the thesis supervisor.

The questions above were based on the previous research presented in sections 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature (Weinstein et. al., 1992; Bloland and Templer, 2004; Abbot, 1988; Robert and Dietrichs, 1999). Goode (1957) also contributed to the approach of measuring the professionalism, but did not provide direct traits.

3.5.4.2 Commitment of Entrepreneur

The items that form the basis for this variable have been divided into four categories, which were all elaborated on in the literary review. All these are displayed on in the table below.

Dimension	Items
Affective	Shared goals with the project Involvement Willingness to exert effort Time spent on project Identification with project
Continuance	The costs of leaving the project
Normative	Pressure to participate

	Obliged to participate
Ideological	Positive to academic involvement with small firms Positive to student involvement in small firm challenges Perceived general acceptance of student involvement in small firm challenges

Table 3.5.4.2 Commitment Dimensions and Items

Commitment was measured in the questionnaire on a 7-point Likert scale (from strongly disagree to strongly agree) using the following question(s):

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
There was good match between my goals and the goals of the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I was fully involved in the program and the students' work	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I participated actively in the program and the students' work	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I made sure to allocate an appropriate amount of time for the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.4.2a Questionnaire – Commitment of Entrepreneur: Affective

From the questions presented above, only the fourth question (which is called time spent on project) was used in the regression analysis. The decision to use only one item (and the selection of which item to use) was decided in cooperation with the thesis supervisor.

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
I was pressured to participate in the program by Innovation Norway and/or the UiA	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
It would have been difficult for me to refuse the invitation of Innovation Norway and the UiA to participate in this program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
There would be costs by not participating	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.4.2b Questionnaire – Commitment of Entrepreneur: Normative and Continuance

From the questions presented above, only the first question (which is called pressured to participate) was used in the regression analysis. The decision to use only one item (and the selection of which item to use) was decided in cooperation with the thesis supervisor.

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
I think it is good for small firms to seek advice and support from university business students and their supervisors	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I think it is beneficial to involve business students in real-life challenges of small firms	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I think that students' project work for small firms is becoming more common these days	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.4.2c Questionnaire – Commitment of Entrepreneur: Ideological

From the questions presented above, only the first question (which is called positive to academic involvement in small firms) was used in the regression analysis. The decision to use only one item (and the selection of which item to use) was decided in cooperation with the thesis supervisor.

The questions above were based on the previous research presented in sections 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature (Ketchand and Strawser, 2001; Meyer and Allen, 1997; Mowday et. al., 1979; Donaldson, 1982).

3.5.4.3 Practicality of Recommendations

The measurement of the practicality of recommendations will be based on the following items:

- How practical did the entrepreneur perceive the recommendations to be?
- How understandable were the recommendations to the entrepreneur?
- How complete was the practical information given in the recommendations?
- How good was the business-advice given by the students?
- Have the students made concrete plans that the entrepreneur can implement?

Practicality of recommendations was measured in the questionnaire on a 7-point Likert scale (from strongly disagree to strongly agree) using the following question(s)

Regardless of whether you have followed the students' recommendations or not, please indicate to what extent you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
The students provided practical recommendations for our company to follow (if we wanted to)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students provided us with a list of concrete steps we could take (if we wanted to)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students provided us with practical information that was useful to our work	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students provided us with advice we could implement in our work (if we wanted to)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students provided us with plans that we could proceed with	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Figure 3.5.4.3 Questionnaire - Practicality of Recommendations

From the questions presented above, only the first question (which is called recommendations perceived as practical) was used in the regression analysis. The decision to use only one item (and the selection of which item to use) was decided in cooperation with the thesis supervisor.

The questions above were based on the previous research presented in sections 2.7. The questions themselves have been formulated for the purpose of this paper, but the items measured are based on previous literature. In this case, Weinstein et. al., (1992) was the most important source of information as he had already researched this variable in the context of satisfaction from consultancy programs at universities.

3.5.5 Other Questions

This section will present other questions that were asked in the questionnaire. The main purpose for asking these questions was to have a body of potential control variables. According to Zikmund et al. (2010), control variables are used in empirical research to reduce the risk of attributing explanatory power to the independent variables that are not responsible for the occurrence of variation in the dependent variable. This will contribute to avoiding validity and reliability issues with the findings. They further point out that when a change in a dependent variable due to a change in the independent variable can be explained by other variables, the relation is spurious.

The control variables that were used in the regression analysis are presented in the figure below.

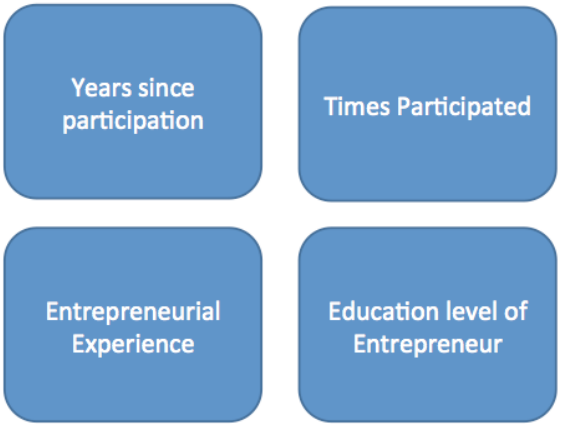


Figure 3.5.5 Control Variables

Years since participation was based on asking the respondents the name of their company (as shown in Exhibit 3.5.2a) and cross-referencing this with the year they participated in the participants list available in appendix 3). This was made into a variable and recoded by subtracting it from the current year (2015) to get the desired control variable.

The first three sections below present the other control variables that were used in the analysis. The remaining sections present other elements that were measured but not used in the analysis.

3.5.5.1 Times participated

Times participated was based on asking the respondents the following question:

How many times/years have you participated in this (or a similar program)?

_____

Figure 3.5.5.1 Times Participated

3.5.5.2 Educational Level of Entrepreneurs

Team size was measured in the questionnaire in a five option multiple-choice question:

Which of the following best describes your level of education?

(1) ❑ Didn't complete high school
(2) ❑ High school education
(3) ❑ Bachelor´s Level Education
(4) ❑ Master´s Level Education
(5) ❑ PhD

Figure 3.5.5.2 Questionnaire – Educational Level of Entrepreneur

This variable was suggested by Weinstein et. al (1992). Other literature also suggests that entrepreneurial education can have an influence on the success of the venture (Robinson and Sexton, 1994).

3.5.5.3 Entrepreneurial Experience

Entrepreneurial experience was measured by numerical responses to the questions:

How many new ventures have you started (including the venture that participated in the program) indicate number of ventures (i.e. 1,2,3,5,10, etc.):

Total so far _____

Total before joining the program _____

Figure 3.5.5.3 Questionnaire – Business Experience of Entrepreneur: Ventures Started

From the questions presented above, only the first question (which is called total ventures) was used in the regression analysis. The decision to use only one item (and the selection of which item to use) was decided in cooperation with the thesis supervisor.

3.5.5.4 Size of Student Teams

Team size was measured in the questionnaire in a two option multiple-choice question:

How many students were assigned to your company/project in INT LAB/Gründerlab

(1) ❑ Up to 3

(2) ❑ More than 3

Figure 3.5.5.4 Questionnaire - Size of Student Teams

3.5.5.5 Business Experience of entrepreneurs

Business experience was measured by numerical responses to the questions:

Years of business experience – indicate number of years (i.e. 1,2,3,5,10, etc.):

How many years have you been in full time employment? _____

How many years have you been employed in a managerial position? _____

How many years of experience do you have of being an entrepreneur? _____

Figure 3.5.5.5 Questionnaire - Business Experience of Entrepreneur: Years

From the questions presented above, only the first question (which is called years of full time work experience) was used in the regression analysis. The decision to use only one item (and the selection of which item to use) was decided in cooperation with the thesis supervisor.

3.5.5.6 Winning Team

Winning team was measured in a simple yes and no question:

My team was one of the winning teams in the final presentation

(1) ❑ Yes

(2) ❑ No

Figure 3.5.5.6 Questionnaire – Winning Team

3.5.5.7 Current Status

Finally, the questionnaire mapped out the current status of the businesses that participated.

Answer the following questions regarding the current status of your company that participated in INT LAB/Gründerlab.

	Yes	No
Does the company still exist?	(1) ❑	(2) ❑
Was the company sold in the period after your participation?	(1) ❑	(2) ❑
Did the company merge with a different company in the period after your participation?	(1) ❑	(2) ❑
Was the company closed down in the period after your participation?	(1) ❑	(2) ❑
Did the company shift focus (i.e. different products and services) in the period after your participation?	(1) ❑	(2) ❑

Figure 3.5.5.7 Questionnaire – Current Status of Business

3.5.8 Quality assurance and translation

In order to make sure all respondents understood the questionnaire, a Norwegian version was made (see appendix 2). The issue with making the questionnaire bi-lingual is that some meaning may be lost in translation. To avoid this, the questionnaire was translated by both authors in cooperation, and then sent to 4 Norwegian students (one of which participated in the international laboratory program) who controlled the questions and translations and gave suggestions to potential improvements. Following from this, the questionnaire was improved.

In addition to the methods above, 3 staff members at UiA also assessed the questionnaire. They all provided notes on potential improvements and based on these notes the questionnaire was improved.

The final quality assurance method before issuing the questionnaire was to run a pilot. The pilot was run with 4 companies who participated in the tourism equivalent of Gründerlab at UiA. This is a rather similar program, and hence a good choice for pilot testing without losing valuable respondents from the two programs the paper is examining. Based on the outcome of the pilot, the questionnaire was improved.

3.6 Reliability and Validity

This section will discuss the reliability and validity of the research in this paper.

This paper would argue that the reliability of the research in this paper is good. It is transparent and (due to a thorough quality assurance) clear. Since the study includes data from all the years of participation, it should also have covered the time aspect.

3.6.1 Reliability

Reliability is synonymous with consistency and repeatability over time. This is required in research studies. The study should be transparent and clear so that others can repeat the same studies themselves and yield the same results (Greener, 2008). An important question here is whether an instrument can be interpreted consistently over diverse circumstances (Field, 2009). Reliability was ensured through ensuring good Cronbach alphas value in multiple item measurements, and usage of accepted single item measurements from earlier studies.

3.6.2 Validity

For the results to be generally applicable beyond the boundaries of the study, it has to possess both *internal* and *external* validity, only then it can be shown to reflect the real world (Walliman, 2011). Internal validity can be reduced through faulty sampling, interference of unnoticed factors, deterioration or change in the nature of materials during or between tests and faulty instruments (op. cit.). External validity can also be reduced by interference of unnoticed factors, poor process description (makes replication impossible), and when people are the subject act differently because of unnatural settings (op. cit.).

Construct validity

Shows that the study actually measures what it intends to measure, to check that the questions are asking what they are meant to be asking (Greener, 2008). It is especially important for surveys that are answered not face to face where there is not possible to clarify the meaning of the questions (op. cit.). Several steps have been taken in this paper to ensure construct validity. Some of these are a thorough literary review. A careful factor analysis, and peer reviews.

Internal validity

Related to causality, i.e. if an independent variable causes a dependent variable to happen. We have to examine if there could also be other variables that have an effect on the dependent variable (Greener, 2008). This paper has included a set of control variables to ensure the internal validity.

External validity

This is a measure if the results of the study can be generalised outside of the study (Greener, 2008). The surface validity is one of the limitations of the study. It only surveys participants from the program at UiA, and it has a fairly small sample. This will be elaborated on later in the paper.

Typical of exploratory descriptive studies, this study has limited external validity. Nevertheless, thanks to the preliminary findings surfaced in the study, future studies have a lower threshold to cross towards wide scale validation. Moreover, since the sample in this paper (despite small size) represents a large part of the population in the context of the study – 44 of 119 firms (37% of the population, or 46% of the actual sampling frame), it may be argued that the findings are relevant for a significant part of this (small) population.

Surface validity

Also known as face validity. The non-researcher, or layperson, should be able to easily tell that the research is conducted in a valid way, that 'on the face of it', it makes sense as a method. It is important to have surface validity, as it will encourage participation in surveys and interviews. The answer to "why do you want to know that?" should be well answered by the researchers to the participants to ensure willingness to answer intricate or personal questions (Greener, 2008). This paper would argue that its research has a high degree of surface validity.

3.7 Population, Sample and Response Rate

3.7.1 Population and Sample

A *population* is any complete group of individuals, stores, territories, sales or students that share some mutual set of characteristics (Zikmund et al., 2010).

The population for this paper consists of the participating firms from International Laboratory and Gründerlab. The number of firms that have participated is 128. A complete list can be found in *appendix 3*. Within these 128, 9 have participated twice, making the total population 119 companies. Contact details were acquired for all but 24 of the companies.

A *sample* is a subset, or part of the larger population (Zikmund et al., 2010).

Furthermore, a sample is used to gather information to be able to make generalizations or draw inferences about a whole population (Kathori, 2004).
According to the Central limit theorem, the larger the sample size (Greener, 2008), the closer it will be to a "normal distribution". Greener (2008) argues that a study should at least have a sample size of 30 for statistical analysis. The sample will then have a reasonable chance of a normal distribution.

A *sample frame* is a list of all the units the sample is to be drawn from (Kathori, 2004). The population that this paper wants to examine is all the firms that have participated in the programs from the start in 2004 and up to the companies that participated in 2014. For the purpose of surveying this population, the intended sample includes the entire population, less 24 companies for whom contact details could not be acquired, leaving us with a sample size of 95. One reason why the contact details were not acquired was due to issues with finding the people behind firms that had gone bankrupt or changed name or corporate identities. Another reason was that some mergers and acquisitions were too difficult to trace. The contact details were particularly difficult to find in cases, where firms participated long ago and when they were at the idea stage. These firms/entrepreneurs had often made significant changes after their establishment.

Despite a strong and continuous effort to collect data from the respondents in the sample, the size of the population has made it impossible to collect data with validity appropriate for generalisation. This is the case, despite the fact that the response rate was high. What makes it possible to come with valid conclusions here despite the small sample is that it covers nearly half of our population.

As can be seen from the sub-sections below, statistical methods like factor and regression analysis has been run. These are meant as indicators of our research and findings, but not intended for generalisation purposes. The upcoming rejections of hypotheses in the result chapter are also based on pure statistical rejections and not for generalisation purposes. It should also be noted that the findings builds a good foundation for further research into the field. For further substantiating validity of the findings, despite small samples, ran statistical power tests for each regression analysis was run. These will be presented in section 4.3.

3.7.2 Survey Response

As mentioned in the previous section, the response rate was high and the sample size was 95 potential respondents.

In total, the number of respondents for the survey was 44. Out of these, 27 were by phone and the remaining 17 were through the online questionnaire. This is a good distribution for avoiding effects of common method bias.

The distribution of survey methods were as follows:

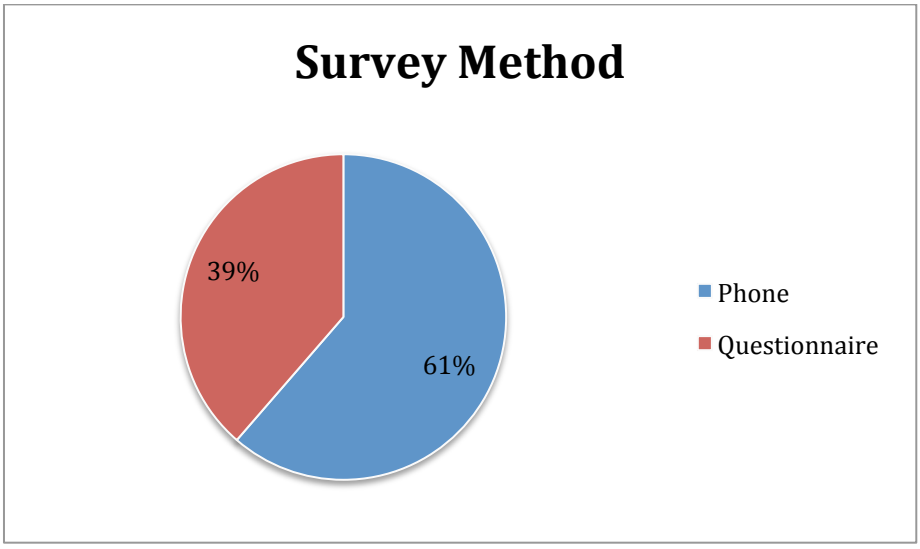


Figure 3.7.2.1 Survey Method

With 44 respondents, the response rate was 46.3%, which is a very good response rate, especially considering the fact that a lot of companies on the sample list had gone out of business or been acquired by other companies. There was also high uncertainty as to whether the contact details were correct.

This section will present descriptive information about the sample. The distribution between males and females show more than twice as many men as women.

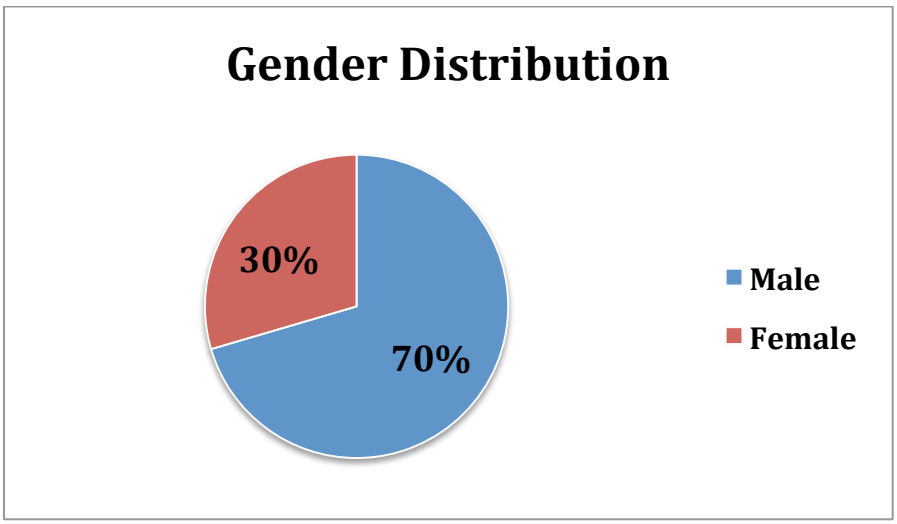


Figure 3.7.2.2 Gender Distribution of Entrepreneurs

The fact that there were so many men participating is quite representative for the population as a whole, where more men have participated in the program than women.

The education levels of the participating entrepreneurs were as follows:

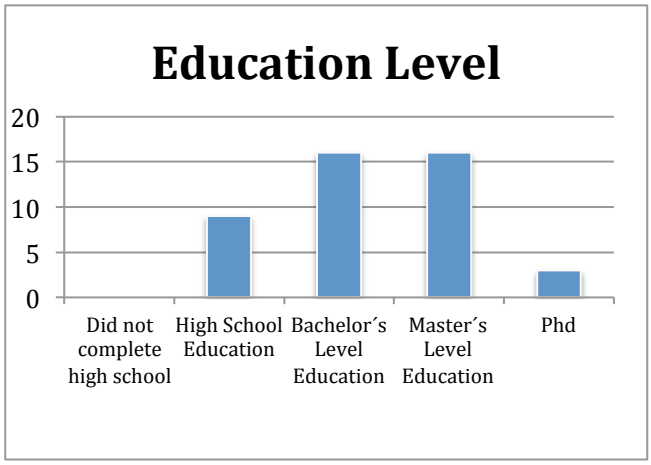


Figure 3.7.2.3 Education Level of Entrepreneurs

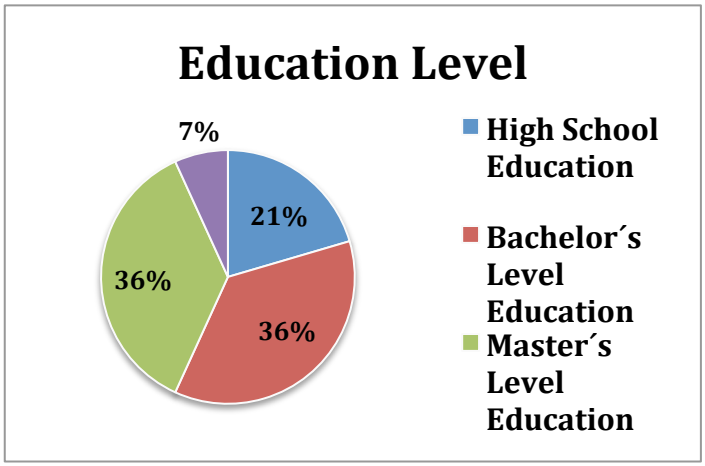


Figure 3.7.2.4 Education Level of Entrepreneurs

As one can see, the highest represented groups were people with a university education at either a bachelor's level or a master's level.

3.8 Data analysis

This section will present the methods used in the data analysis.

3.8.1 Descriptive Statistics

Descriptive research seeks to describe the characteristics of a subject as accurately as possible. The research also has no control over the variables, and has the role of reporting what has happened (or is happening). Most of social research is descriptive statistics. This type of research is concerned with developing indices from the raw data (Kathori, 2004). Observation is the tool of the study. Dependent on the type of information the researcher seeks; different methods can be used to collect the data. Examples of methods can be surveys, interviews, visual recordings, even sound and smells. The important part is that the observations are recorded (Walliman, 2011).

This study has presented the descriptive statistics by using frequencies, median and mean. It shows in tables both the distribution between the different response options and categorises the options for further analysis. The descriptive statistics are essential in answering the first part of our research question regarding the effects of the program on the participating firms.

3.8.2 Item Selection

This section will present the selection of items of the dependent and independent variables. It will do so by presenting the factor analysis for the dependent variables, and the method basis for item selection for the independent variables.

3.8.2.1 Factor Analysis

A factor analysis was run for the dependent variables only. The reason for this is that the identification of effects from participation was the first and critical component of the research question and objectives in this paper. The purpose of this is to ensure measurement validity by eliminating items that load on more than one variable and to uncover relevant items within each variable. This increases the validity of the variables (Zikmund et al. (2010). Based on the factor analysis, some items were identified that loaded on more than one variable:

Dimensions	Eliminated Items
Strategic Effects	19 a Quicker Development
	19 b Information used by company
	19 c Identified underlying challenges
	19 d Access to useful contacts and networks

	19e Access to useful resources
Intangible Effects	20h Learning experience
Economic Effects	21e Market Share

Table 3.8.2.1.1 Eliminated Items

These were eliminated. As a result, the following factor loading table could be presented:

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.684
Bartlett's Test of Sphericity	Approx. Chi-Square	805.579
	df	190
	Sig.	.000

Figure 3.8.2.1.1 SPSS Output: Kaiser-Meyer-Olkin Measure and Bartlett´s Test

As can be seen in the table above, the Kaiser-Meyer-Olkin test yields mediocre results. It should preferably be above 0,7 (Field, 2009). This means that the data, despite a relatively small sample, lends itself to conducting a factor analysis. The significance level is good.

Rotated Factor Matrix[a]

	Factor				
	1	2	3	4	5
18a Satisfaction		.769			
18b Satisfaction		.923			
18c Satisfaction		.914			
18d Satisfaction		.924			
18e Satisfaction		.647			
19f StrategicEffects				.752	
19g StrategicEffects				.954	
20a IntangibleEffects	.823				
20b IntangibleEffects	.890				
20c IntangibleEffects	.883				
20d IntangibleEffects	.914				
20e IntangibleEffects	.893				
20f IntangibleEffects	.886				
20g IntangibleEffects	.740				
21a EconomicEffects					.411
21b EconomicEffects			.732		
21c EconomicEffects			.898		
21d EconomicEffects					.644
21f EconomicEffects			.732		
21g EconomicEffects			.509		

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Figure 3.8.2.1.2 SPSS Output: Rotated Factor Matrix

All items had an eigenvalue above 1 and loaded well on their respective factors.

The items of these variables were recoded in SPSS into its corresponding variables by computing the average of the raw data results for each respondent. These were then used in the regressions analyses and the descriptive analyses.

Factor 5 was not significant as it had a Cronbach´s Alpha 43.2. Factor five consisted for two items from economic effects:

- 21a Economic Effects: Number of employees
- 21d Economic Effects: Cost levels

These were therefore eliminated, and not considered in the regression analysis.

Apart from the above-mentioned issues, the remaining factors all loaded nicely and were significant. The Cronbach's Alphas and number of items for the different factors/variables were:

Variables	Cronbach´s Alpha	Items	Result
Satisfaction	0.925	5	Good
Strategic Effects	0.855	2	Good
Intangible Effects	0.960	7	Good
Economic Effects	0.799	4	Good

Table 3.8.2.1.2 Cronbach´s Alpha Results

The variables can, as a result, be argued to be reliable.

In order to better understand the remaining items for variables used in this paper, the lists below will present the remaining items for each of the dependent variables.

The included items of **satisfaction** were:

- 18a Satisfaction: Would repeat participation
- 18b Satisfaction: Recommendation of program
- 18c Satisfaction: Good use of time
- 18d Satisfaction: Good choice to participate
- 18e Satisfaction: Needed at the time

None of the satisfaction items were excluded.

The included items of **strategic effects** were:

- 19f Strategic Effects: Post-program student involvement
- 19g Strategic Effects: Post-program student employment

In strategic effects, only the recruitment questions loaded on one factor alone. The remaining strategic effects were therefore not included in further analyses. The two effects were, on several occasions in the analysis, called Strategic HR. This is due to the fact that the two remaining variables both relate to Human Resource decisions with regards to taking on board new employees from the students who participated in the programme.
Since the strategic outcomes of the participation were mainly knowledge and information, these were closely related to the intangible outcomes and hence captured by that variable. This becomes even clearer when one looks at strategic options and strategic planning process. They were both found under intangible effects. Hence, with this exclusion of items, conceptual ambiguity between strategic and intangible effects was clarified and refined.

The included items of **intangible effects** were:

- 20a Intangible effects: Improved analytical skills
- 20b Intangible effects: Improved critical thinking
- 20c Intangible effects: Improved decision-making
- 20d Intangible effects: Improved market segments analysis
- 20e Intangible effects: Improved strategic options understanding
- 20f Intangible effects: Improved strategic planning processes understanding
- 20g Intangible effects: Change perceptions in business elements

None of the intangible effect items were excluded.

The included items of the **economic effects** variable were:

- 21b Economic Effects: Profit levels
- 21c Economic Effects: Sales volumes
- 21f Economic Effects: Number of customers
- 21g Economic Effects: Number of business partners

As one can see here, the remaining economic effects are all related to the income side. The eliminated dimensions/items were related to the cost side of the economic effects.

As implementation did not load correctly in the factor analysis, the decision was made (in cooperation with the thesis supervisor) to only include the initial items from the questionnaire in the regression analysis. This is question 17a, whereby participants were asked if the recommendations made by the students were fully implemented by the company.

3.8.2.2 Independent variables

The items and variables that were used can be found in the table below:

Variable	Items
Perceived Professionalism of Students	7a Professional expertise
Commitment of Entrepreneur – Affective	8d Time spent on project
Commitment of Entrepreneur – Normative	9a Pressure to participate
Commitment of Entrepreneur – Ideological	10a Positive to academic involvement with small firms
Practicality of Recommendation	11a Recommendations Perceived as Practical
Size of student groups	12 Size of student groups
Education Level of Participating Entrepreneur	14 Education level of participating entrepreneur
Business Experience	15a Years of full-time work experience
Entrepreneurial Experience	16a Total ventures

Table 3.8.2.2 Applied Variables and items

Team size (H4) was excluded due to an issue with a lot of the respondents in the survey being very unsure about this. It was therefore perceived that the results of this question were quite incomplete.

3.8.3 Correlation

Covariance is a crude measurement of the relationships between variables. Standardised values of these derive to Pearson's correlation coefficient. These values have to be between -1 and +1. With +1 indicating a perfect positive relationship between to variables, -1 indicates a perfect negative relationship. While a coefficient of 0, indicates no relationship. This is a commonly applied measure to indicate the size of the effect or relationship one variable has on another (Field, 2009). Pearson's correlation coefficient is also referred to as Pearson's *r* (Greener, 2008).

3.8.4 Multicollinearity

Multicollinearity is the term used to denote linear relationships or near linear relationships between predictor variables in linear regression (Silvey, 1969). This can pose a problem in

multiple-regression models. This arises when there is strong correlation between two or more predictor variables in the regression model. Low levels of collinearity pose little threat to SPSS analysis. However, as collinearity rises there can occur three problems with the analysis (Field, 2009).

The threats are as following:

- **Untrustworthy *b*s:** Increasing collinearity increases the standard errors of the *b* coefficient (op. cit).
- **Limits the size of *R*:** When two or more highly correlating predictor variables are both added to the model. One of them might predict the outcome quite successfully. However, if the other predictor also accounts for the same variance in the model, it will not explain any additional variance to the *R* (op. cit).
- **Importance of predictors:** If two or more predictors are highly correlated, and therefore account for the same variance. It will make it impossible to know which one accounts for what. This reduces the explanatory power of the predictors (op. cit).

A good way to scan for multicollinearity is by using a correlation matrix of all the predictors. The correlation matrices for the data in this paper can be found in appendix 4. If the correlation between predictors is high, over 0.8 or 0.9, then it is of concern. Unfortunately this method does not manage to catch more subtle forms of multicollinearity, therefore applying the Variance Inflation Factor (VIF) diagnostics will give a good indicator. A value of 10 is seen as problematic. Values below 0.1-0.2 are also indications of serious concerns (Field, 2009).

3.8.5 Regression analysis

If the data from a survey fall into a linear arrangement, there can be assumed a relationship, either positive or negative (Walliman, 2011). The association is stronger the more the data points form a straight line. If a line is drawn to trace the estimated line, it is called the line of best fit, or the regression line (Walliman, 2011). This method can be used to predict the outcome from a one-predictor variable single regression. If there are multiple predictors, then multiple regression analysis is the appropriate method. This analytical tool is useful because it allows the researcher take the analysis steps beyond the collected data (Field, 2009). The slope of the straight line in the model is denoted by b_1, where the line crosses the vertical

angle is denoted as the intercept of the model, b_0. The difference between the prediction and the actual outcome obtained is the residual, ε_i.
This in turn is expressed in the general model:

$Y_i = (b_0 + b_1 X_i) + \varepsilon_i$ (Field, 2009)

To find the best fitting regression line, one can utilizes *the methods of least squares*. This method will find the regression line with the least amount of residuals, thus more accurate predictions (Field, 2009).

In this paper, the coefficients will not receive much attention. This is mainly due to the fact that the sample does not lend itself to generalisation and hence going too much into detail with regards to the coefficients (provided they point in the expected direction) would be over emphasising the results of the survey.

3.8.6 Cronbach's Alpha

Cronbach's Alpha is used to test if a dataset is reliable, even if the test is done at different points in time. Cronbach (1951) introduced a measure, which is loosely similar to splitting the data set in two in every possible way and computing the correlation coefficient of each spilt. The Cronbach's alpha is the average of all these values (Field, 2009). There are different alpha values that are found to be acceptable in different reports, these range from 0.70 to 0.95. Low values can be due to a low number of questions, heterogeneous constructs or poor inter-relatedness between items or (Tavakol and Dennick, 2011).

3.8.7 Kaiser–Meyer–Olkin Measure of Sampling Adequacy

The Kaiser-Meyer-Olkin measure for sampling adequacy can be calculated for both multiple and individual variables. It represents the ratio of squared correlation between variables to the squared partial correlation between variables. The range is between 0 and 1. A 0 value gives the indication that the sum of partial correlations is large relative to the sum of correlations, which in turn indicates diffusion in the pattern of correlations. This means, that factor analysis is not likely to be appropriate. Values close to 1 indicates that the correlation patterns are relatively compact and factor analysis should likely give reliable and distinctive factors (Field, 2009). Values below 0.5 are unacceptable, between 0.5 and 0.59 are miserable, between 0.6 and 0.69 are mediocre, between 0.7 and 0.79 are middling, between 0.8 and 0.89

are meritorious, and over 0.9 are marvellous (Norman and Streiner, 2008).

3.8.8 Statistical Power

Due to the small sample available in the survey, further tests were done into the statistical power of the data. This was done using a statistical power calculator (Soper, 2015). The calculator used is called a Post-Hoc statistical power calculator (op cit). The calculations are based on:

- Number of predictors
- Observed R Square
- Probability level
- Sample Size

This generates a number from 0-1 where anything above 0.8 means the data is robust and has the required statistical power.

Further details about the calculations behind the analysis can be found in appendix 5.

Chapter 4 Results

This section will present the results from the survey split into sections. It will start by presenting the variables five main variables (economic, strategic, intangible, satisfaction and implementation) in terms of general descriptive statistics. Then it will present the results of the regression analyses and evaluate their statistical power in section 4.2. Section 4.3 will contain a short summary of the results.

4.1 Descriptive analysis

Statistics for the dependent variables (after recoding the items into one variable) were as follows:

Statistics

		17a Implementation	StrategicHR	Intangible	Satisfaction	Economic
N	Valid	44	44	44	44	44
	Missing	0	0	0	0	0
Mean		3.48	2.2045	3.9545	5.5136	4.7557
Median		3.50	1.0000	4.5000	5.8000	4.7500
Mode		1	1.00	1.00	7.00	4.00
Sum		153	97.00	174.00	242.60	209.25

Figure 4.1 SPSS output: General Statistics

What should be noted here is that on a Likert-scale from strongly disagree to strongly agree, the strategic effects appear to be quite low. But as this involves hiring or engaging students in the business after the completion of the project, this score is rather good. It means that several of the students were hired in the respective company after completing the project.

In order to better understand the individual variable, this section also shows descriptive statistic for each item in the sub-sections below.

4.1.1 Satisfaction

Satisfaction consists of 5 items. Their mean and median are as follows:

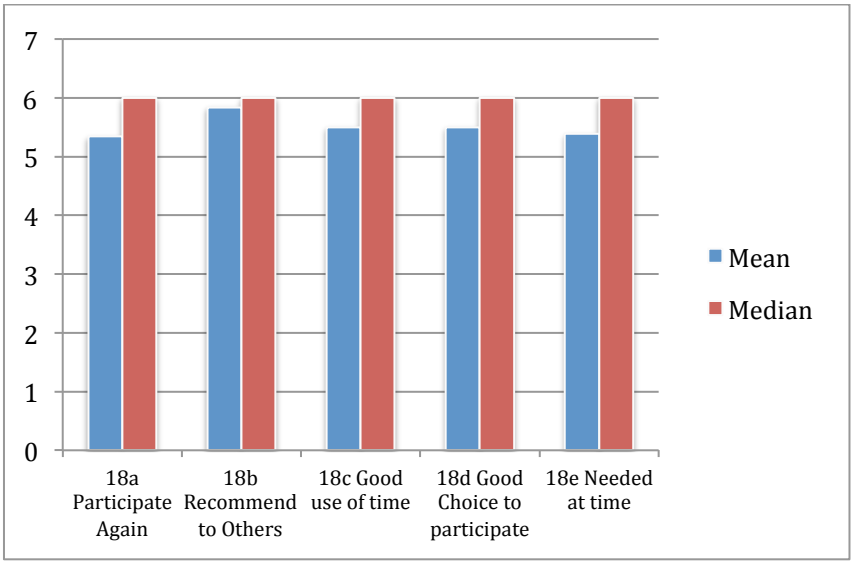


Figure 4.1.1.1 Mean and Median for Satisfaction Variables

The median for all items was 6. The highest mean here was 5.8 (recommend to others) and the lowest mean was 5.3 (participate again). Below is a frequency table that further depicts the results.

Satisfaction	18a	18b	18c	18d	18e
Strongly Disagree	2	1	1	2	2
Disagree	1	1	1	0	2
Slightly disagree	4	1	4	3	3
Neither Agree nor Disagree	5	4	4	4	3
Slightly Agree	5	5	9	9	8
Agree	15	14	9	12	12
Strongly Agree	12	18	16	14	14
Total	**44**	**44**	**44**	**44**	**44**
Disagree	**7**	**3**	**6**	**5**	**7**
Neither Disagree or Agree	**5**	**4**	**4**	**4**	**3**
Agree	**32**	**37**	**34**	**35**	**34**

Table 4.1.1.1 Frequency Table for Satisfaction Variables

The pie chart below further emphasises the domination by the 3 groupings from slightly disagree to disagree for all the items:

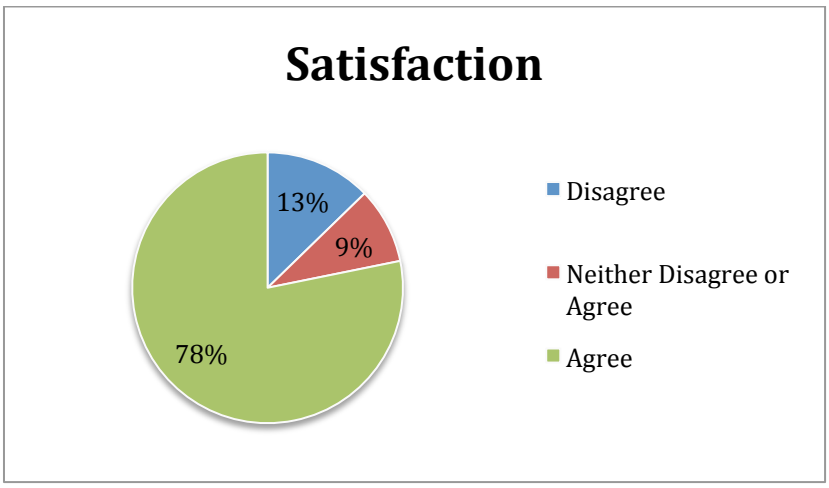


Figure 4.1.1.2 Satisfaction Distribution

4.1.2 Strategic Effects

Strategic effects consist of two items. Their means and medians are as follows:

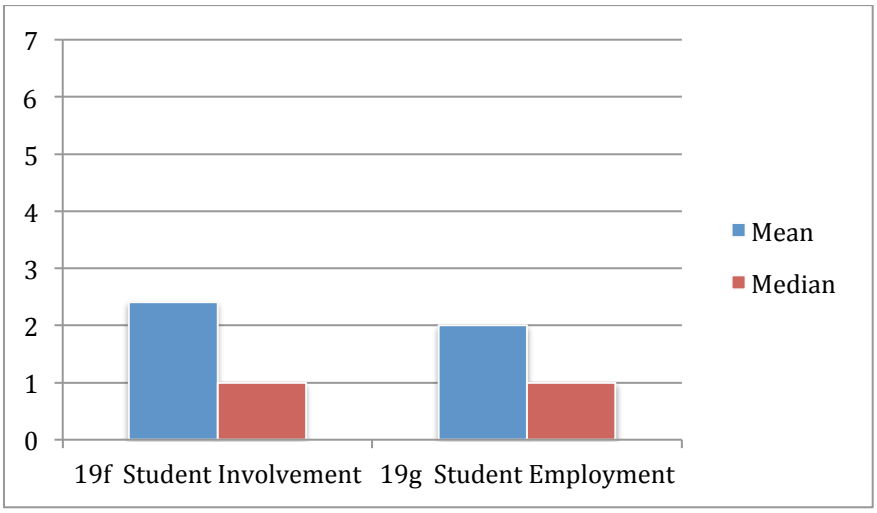


Figure 4.1.2.1 Mean and Median for Strategic Effects Variables

The means are both around 2 and the medians are 1.

Below is a frequency table that further depicts the results:

Strategic Effects	Involvement	Employment
Strongly Disagree	31	27
Disagree	3	3
Slightly disagree	5	1
Neither Agree nor Disagree	1	3
Slightly Agree	2	4
Agree	2	4
Strongly Agree	0	2
Total	**44**	**44**
Disagree	**39**	**31**
Neither Disagree or Agree	**1**	**3**
Agree	**4**	**10**

Table 4.1.2.1 Frequency Table for Strategic Effects

As mentioned earlier, the results here look rather strange due to the nature of the question. In order to better understand it, it can be pointed out that 10 respondents either agreed or strongly agreed that they have involved students after the project ended. 3 respondents neither agreed nor disagreed and the remaining 31 did not involve students after the project ended.

For student employment (19g), 5 people agreed, 5 people neither agreed nor disagreed and the remaining 34 disagreed that they had employed students after the program ended. The chart below presents the average responses based on three criteria (agree, neither agree or disagree, disagree).

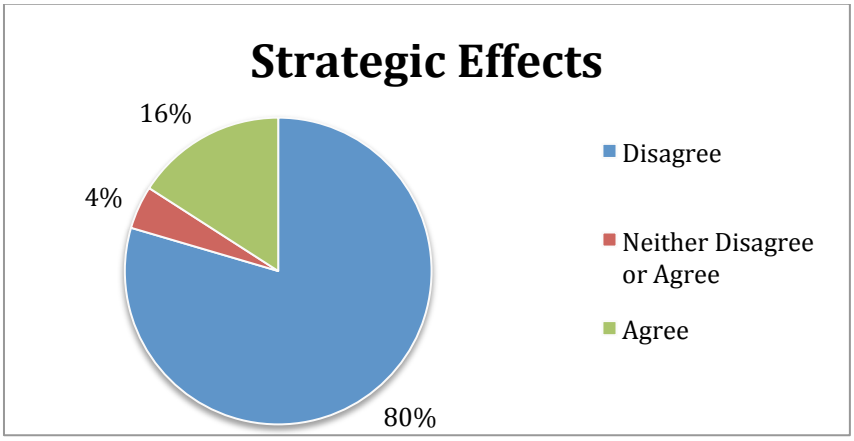


Figure 4.1.2.2 Strategic Effects Distribution

4.1.3 Intangible Effects

From the factor loading, Intangible Effects was the variable with the largest amount of items (7). In order to better understand the results that came from these items, the mean and median results for each variable is presented in the table below.

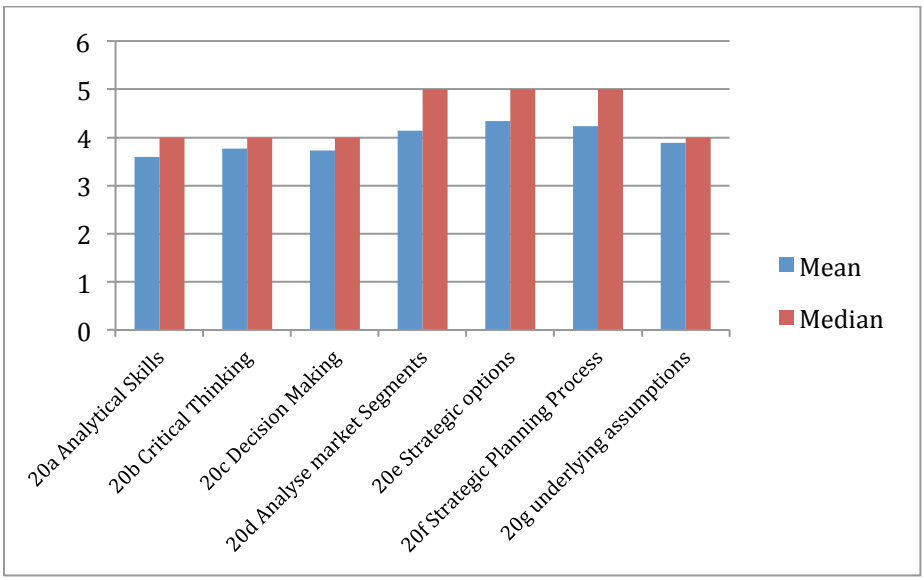


Figure 4.1.3.1 Mean and Median of Intangible Effects Variables

The highest mean and median results were for Analyse market segments (20d), Strategic options (20e) and strategic planning processes (20f) with a median of 5 and mean values of 4.1, 4.3 and 4.2 respectively. The remaining variables had a median of 4 and mean values ranging from 3.6-3.9

Intangible Effects	20a	20b	20c	20d	20e	20f	20g	20h
Strongly Disagree	12	10	11	8	6	7	7	2
Disagree	4	4	3	3	4	4	4	2
Slightly disagree	1	1	4	4	2	1	5	4
Neither Agree or Disagree	7	11	7	4	6	8	11	5
Slightly Agree	13	8	8	12	11	11	7	8
Agree	7	9	10	11	13	10	8	10
Strongly Agree	0	1	1	2	2	3	2	13
Total	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**
Disagree	**17**	**15**	**18**	**15**	**12**	**12**	**16**	**8**
Neither Agree or Disagree	**7**	**11**	**7**	**4**	**6**	**8**	**11**	**5**
Agree	**20**	**18**	**19**	**25**	**26**	**24**	**17**	**31**

Table 4.1.3.1 Frequency Table for Intangible Effects

The chart below presents the average responses based on three criteria (agree, neither agree or disagree, disagree).

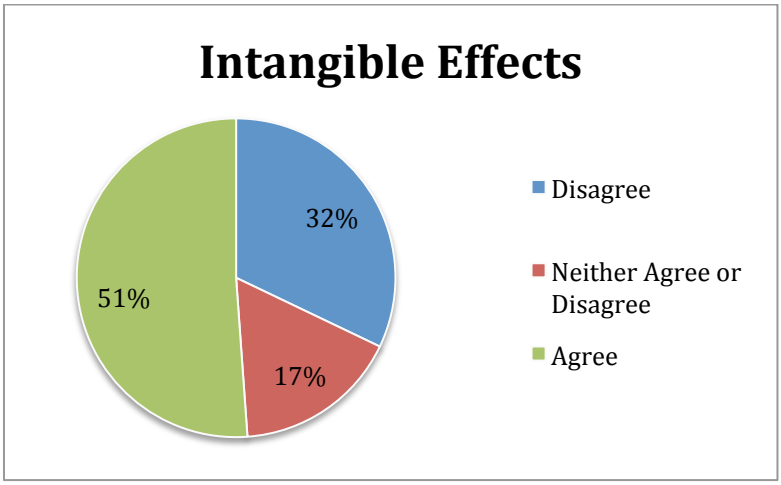


Figure 4.1.3.2 Intangible Effects Distribution

4.1.4 Implementation

For implementation, the highest frequencies are (as shown in the table below) strongly disagree (10) and slightly agree (9). The mean is 3.48 and the median is 3.5.

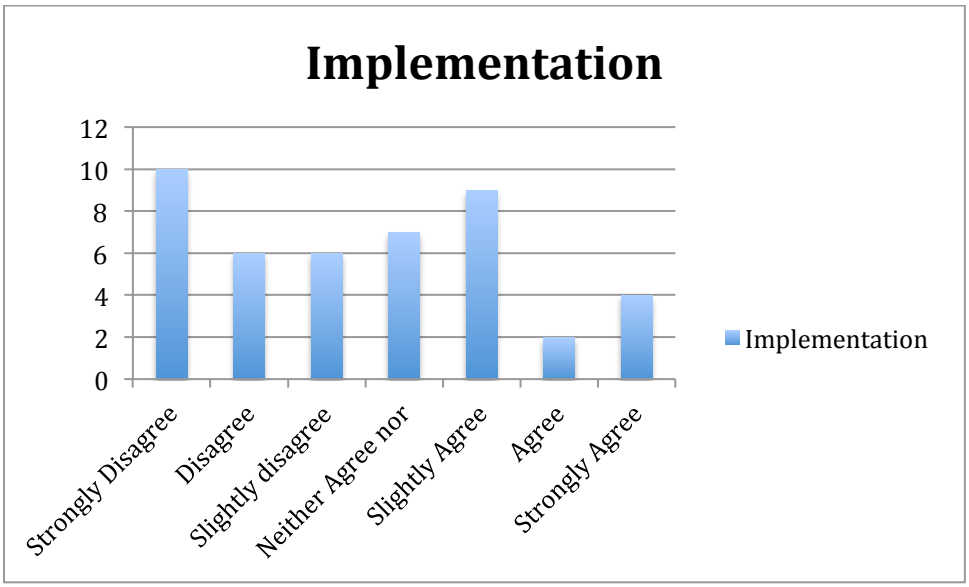


Figure 4.1.4.1 Implementation Frequencies

The pie chart below further emphasises the domination by the 3 groupings from slightly disagree to disagree.

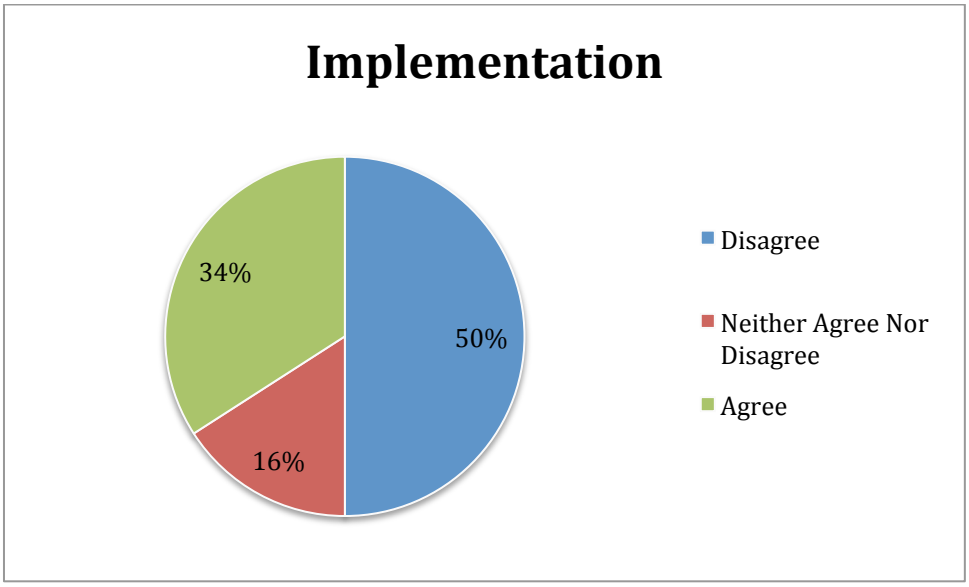


Figure 4.1.4.2 Implementation Distribution

It should however at this point be emphasised that the question was whether the entrepreneur **fully** implemented the recommendations. For the questions pertaining to more partial implementation, the mean and median were higher.

Below is the frequency distribution for the regression

Implementation	17a Full Implementation
Strongly Disagree	10
Disagree	6
Slightly disagree	6
Neither Agree nor Disagree	7
Slightly Agree	9
Agree	2
Strongly Agree	4
Total	**44**
Disagree	**22**
Neither Agree or Disagree	**7**
Agree	**15**

Table 4.1.4.1 Implementation Frequency Table

4.1.5 Economic Effects

Economic effects consist of 4 items. Their means and medians are as follows.

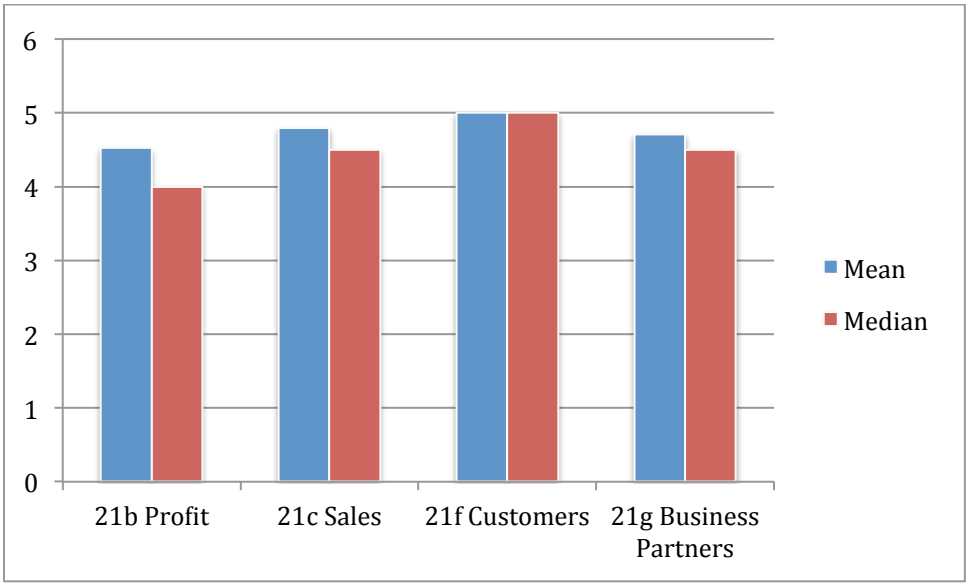


Figure 4.1.4.3 Mean and Median for Economic Effects Variables

Here, customers (21f) had a median of 5, sales (21c) and business partners (21g) had a median of 4.5 and 21b had a median of 4. The highest mean was for increase in customers (21f) with a mean of 5. The lowest was increase in profits with a mean of 4.5.

Below is a frequency table that depicts the results.

Economic Effects	21b	21c	21f	21g
Strongly Disagree	0	1	1	0
Disagree	0	0	0	1
Slightly disagree	1	0	0	1
Neither Agree nor Disagree	25	21	16	20
Slightly Agree	12	10	14	12
Agree	6	8	6	8
Strongly Agree	0	4	7	2
Total	**44**	**44**	**44**	**44**
Disagree	**1**	**1**	**1**	**2**
Neither Disagree or Agree	**25**	**21**	**16**	**20**
Agree	**18**	**22**	**27**	**22**

Table 4.1.4.2 Frequency Table for Economic Effects Variables

The chart below presents the average responses based on three criteria (agree, neither agree or disagree, disagree).

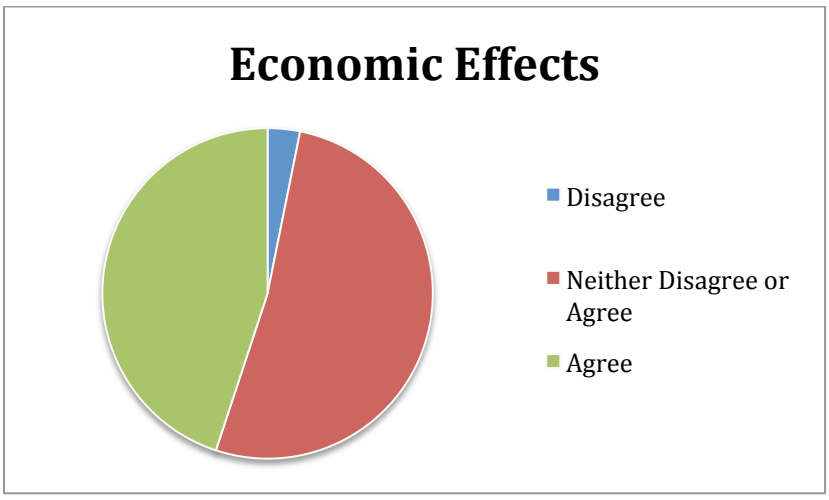


Figure 4.1.4.4 Economic Effects Distribution

4.2 Regression Analysis

The regression analysis was run for each of the dependent variables. This section is therefore further split into one section per variable.

None of the items suffered from multicollinearity issues. VIF values were well within range (highest being well under 2) and no issues with correlation. This will be presented in the sub-sections.

Control variables used in the analysis were times participated, years passed since participating, years of business experience and education level of entrepreneur.

4.2.1 Satisfaction

Below is the regression analysis with model summary, ANOVA, Coefficients and multicollinearity for satisfaction. The correlation matrix can be found in appendix 4. No correlations were at an unacceptable level.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.866[a]	.750	.684	.78665	.750	11.354	9	34	.000

a. Predictors: (Constant), 11a Practicality, Timepassed, 8d ComittmentAffective, 9a ComittmentNormative, 14 Educationlvl, 6 Timesparticipated, 16a CompaniesEstablished, 10a ComittmentIdeological, 7a Professionality

Figure 4.2.1.1 SPSS Output: Satisfaction Model Summary

This result has a rather high R Square, something that may be an indication of multicollinearity or very high explanatory power.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.232	9	7.026	11.354	.000[b]
	Residual	21.040	34	.619		
	Total	84.272	43			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), 11a Practicality, Timepassed, 8d ComittmentAffective, 9a ComittmentNormative, 14 Educationlvl, 6 Timesparticipated, 16a CompaniesEstablished, 10a ComittmentIdeological, 7a Professionality

Figure 4.2.1.2 SPSS Output: Satisfaction ANOVA

The model is significant at a 0.1 level

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.496	1.147		.432	.668					
	6 Timesparticipated	-.256	.222	-.109	-1.152	.257	.005	-.194	-.099	.827	1.209
	Timepassed	-.152	.068	-.221	-2.235	.032	-.204	-.358	-.192	.754	1.326
	14 Educationlvl	-.134	.146	-.084	-.920	.364	-.028	-.156	-.079	.874	1.144
	16a CompaniesEstablished	.066	.061	.108	1.087	.285	.013	.183	.093	.751	1.332
	7a Professionality	.370	.127	.344	2.910	.006	.725	.447	.249	.527	1.899
	8d ComittmentAffective	.218	.145	.138	1.505	.142	.357	.250	.129	.877	1.140
	9a ComittmentNormative	-.060	.095	-.066	-.630	.533	-.397	-.107	-.054	.661	1.513
	10a ComittmentIdeological	.339	.111	.353	3.057	.004	.677	.464	.262	.549	1.821
	11a Practicality	.201	.098	.229	2.047	.048	.603	.331	.175	.587	1.703

a. Dependent Variable: Satisfaction

Figure 4.2.1.3 SPSS Output: Satisfaction Coefficients

The VIF values are well within range, the highest being 1.899, and all other being below.

Significant independent variables for this dependent variable are:

- Commitment of Participating Entrepreneur – Ideological
- Perceived Professionalism of Students
- Time Passed
- Practicality of recommendations

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions									
				(Constant)	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	7a Professionality	8d ComittmentAffective	9a ComittmentNormative	10a ComittmentIdeological	11a Practicality
1	1	8.589	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.513	4.092	.00	.01	.05	.00	.55	.00	.00	.01	.00	.00
	3	.382	4.739	.00	.00	.00	.00	.01	.00	.00	.49	.01	.01
	4	.210	6.403	.00	.17	.53	.00	.25	.00	.00	.01	.00	.00
	5	.133	8.029	.00	.75	.25	.00	.12	.01	.00	.06	.00	.01
	6	.075	10.684	.00	.01	.00	.42	.00	.02	.00	.03	.00	.22
	7	.046	13.667	.01	.03	.09	.30	.06	.02	.08	.00	.05	.45
	8	.026	18.267	.00	.01	.00	.00	.00	.20	.10	.15	.82	.00
	9	.018	21.686	.02	.01	.02	.08	.00	.75	.34	.10	.02	.30
	10	.008	32.232	.96	.00	.06	.19	.00	.00	.47	.13	.09	.00

a. Dependent Variable: Satisfaction

Figure 4.2.1.4 SPSS Output: Satisfaction Collinearity Diagnostics

The variance propositions in the multicollinearity table are also acceptable.

4.2.2 Strategic Effects

Below is the regression analysis with model summary, ANOVA, Coefficients and multicollinearity for the strategic effects. The correlation matrix can be found in appendix 4. No correlations were at an unacceptable level.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.637[a]	.405	.248	1.57697	.405	2.574	9	34	.022

a. Predictors: (Constant), 11a Practicality, Timepassed, 8d ComittmentAffective, 9a ComittmentNormative, 14 Educationlvl, 6 Timesparticipated, 16a CompaniesEstablished, 10a ComittmentIdeological, 7a Professionality

Figure 4.2.2.1 SPSS Output: Strategic Effects Model Summary

The adjusted R Square and R square are both within acceptable levels, and as a result of this, multicollinearity does not appear high.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.607	9	6.401	2.574	.022[b]
	Residual	84.552	34	2.487		
	Total	142.159	43			

a. Dependent Variable: StrategicHR

b. Predictors: (Constant), 11a Practicality, Timepassed, 8d ComittmentAffective, 9a ComittmentNormative, 14 Educationlvl, 6 Timesparticipated, 16a CompaniesEstablished, 10a ComittmentIdeological, 7a Professionality

Figure 4.2.2.2 SPSS Output: Strategic Effects ANOVA

The model is significant at a 0.5 level.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-1.352	2.300		-.588	.561					
	6 Timesparticipated	1.123	.445	.367	2.521	.017	.499	.397	.333	.827	1.209
	Timepassed	-.096	.137	-.107	-.704	.486	-.059	-.120	-.093	.754	1.326
	14 Educationlvl	.254	.293	.123	.868	.392	.267	.147	.115	.874	1.144
	16a CompaniesEstablished	.194	.122	.242	1.585	.122	.283	.262	.210	.751	1.332
	7a Professionality	.209	.255	.149	.820	.418	.245	.139	.108	.527	1.899
	8d ComittmentAffective	-.103	.291	-.050	-.353	.726	-.016	-.061	-.047	.877	1.140
	9a ComittmentNormative	.084	.191	.071	.437	.665	.115	.075	.058	.661	1.513
	10a ComittmentIdeological	-.114	.222	-.091	-.512	.612	.074	-.087	-.068	.549	1.821
	11a Practicality	.239	.197	.209	1.213	.234	.363	.204	.160	.587	1.703

a. Dependent Variable: StrategicHR

Figure 4.2.2.3 Coefficients for Strategic Effects

The VIF values are well within range, the highest being 1.899, and all other being below.

The variable, which was found to be significant was:

- Times Participated

This is a control variable.

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions									
				(Constant)	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	7a Professionality	8d ComittmentAffective	9a ComittmentNormative	10a ComittmentIdeological	11a Practicality
1	1	8.589	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.513	4.092	.00	.01	.05	.00	.55	.00	.00	.01	.00	.00
	3	.382	4.739	.00	.00	.00	.00	.01	.00	.00	.49	.01	.01
	4	.210	6.403	.00	.17	.53	.00	.25	.00	.00	.01	.00	.00
	5	.133	8.029	.00	.75	.25	.00	.12	.01	.00	.06	.00	.01
	6	.075	10.684	.00	.01	.00	.42	.00	.02	.00	.03	.00	.22
	7	.046	13.667	.01	.03	.09	.30	.06	.02	.08	.00	.05	.45
	8	.026	18.267	.00	.01	.00	.00	.00	.20	.10	.15	.82	.00
	9	.018	21.686	.02	.01	.02	.08	.00	.75	.34	.10	.02	.30
	10	.008	32.232	.96	.00	.06	.19	.00	.00	.47	.13	.09	.00

a. Dependent Variable: StrategicHR

Figure 4.2.2.4 SPSS Output: Strategic Effects Collinearity Diagnostics

The variance propositions in the multicollinearity table are also acceptable.

4.2.3 Intangible Effects

Below is the regression analysis with model summary, ANOVA, Coefficients and multicollinearity for the intangible effects. The correlation matrix can be found in appendix 4. No correlations were at an unacceptable level.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.701[a]	.491	.356	1.37027	.491	3.644	9	34	.003

a. Predictors: (Constant), 11a Practicality, Timepassed, 8d ComittmentAffective, 9a ComittmentNormative, 14 Educationlvl, 6 Timesparticipated, 16a CompaniesEstablished, 10a ComittmentIdeological, 7a Professionality

Figure 4.2.3.1 SPSS Output: Intangible Effects Model Summary

The adjusted R Square and R Square are both within acceptable levels, and as a result of this, multicollinearity does not appear high.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	61.580	9	6.842	3.644	.003[b]
	Residual	63.840	34	1.878		
	Total	125.419	43			

a. Dependent Variable: Intangible

b. Predictors: (Constant), 11a Practicality, Timepassed, 8d ComittmentAffective, 9a ComittmentNormative, 14 Educationlvl, 6 Timesparticipated, 16a CompaniesEstablished, 10a ComittmentIdeological, 7a Professionality

Figure 4.2.3.2 SPSS Output: Intangible Effects ANOVA

The model is significant at a 0.02 level.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-1.045	1.999		-.523	.604					
	6 Timesparticipated	.271	.387	.094	.701	.488	.140	.119	.086	.827	1.209
	Timepassed	.045	.119	.054	.381	.706	.067	.065	.047	.754	1.326
	14 Educationlvl	-.692	.255	-.356	-2.719	.010	-.308	-.423	-.333	.874	1.144
	16a CompaniesEstablished	-.003	.106	-.004	-.028	.978	.019	-.005	-.003	.751	1.332
	7a Professionality	-.104	.221	-.079	-.469	.642	.332	-.080	-.057	.527	1.899
	8d ComittmentAffective	.394	.253	.204	1.561	.128	.303	.259	.191	.877	1.140
	9a ComittmentNormative	.241	.166	.218	1.447	.157	-.008	.241	.177	.661	1.513
	10a ComittmentIdeological	.528	.193	.452	2.737	.010	.460	.425	.335	.549	1.821
	11a Practicality	.316	.171	.295	1.846	.074	.417	.302	.226	.587	1.703

a. Dependent Variable: Intangible

Figure 4.2.3.3 SPSS Output: Intangible Effects Coefficients

The VIF values are well within range (highest is 1.899). This indicates low multicollinearity.

Significant independent variables for this dependent variable are:

- Commitment of Entrepreneur (Ideological)
- Education Level of the Participating Entrepreneur
- Practicality of recommendations (Weak)

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions									
				(Constant)	6 Timespa rticipate d	Timepas sed	14 Educatio nlvl	16a Companie sEstabli shed	7a Professio nality	8d Comittm entAffect ive	9a Comittm entNorm ative	10a Comittm entIdeolo gical	11a Practicali ty
1	1	8.589	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.513	4.092	.00	.01	.05	.00	.55	.00	.00	.01	.00	.00
	3	.382	4.739	.00	.00	.00	.00	.01	.00	.00	.49	.01	.01
	4	.210	6.403	.00	.17	.53	.00	.25	.00	.00	.01	.00	.00
	5	.133	8.029	.00	.75	.25	.00	.12	.01	.00	.06	.00	.01
	6	.075	10.684	.00	.01	.00	.42	.00	.02	.00	.03	.00	.22
	7	.046	13.667	.01	.03	.09	.30	.06	.02	.08	.00	.05	.45
	8	.026	18.267	.00	.01	.00	.00	.00	.20	.10	.15	.82	.00
	9	.018	21.686	.02	.01	.02	.08	.00	.75	.34	.10	.02	.30
	10	.008	32.232	.96	.00	.06	.19	.00	.00	.47	.13	.09	.00

a. Dependent Variable: Intangible

Figure 4.2.3.4 SPSS Output: Intangible Effects Collinearity Diagnostics

The variance propositions in the multicollinearity table are also acceptable.

4.2.4 Implementation

Below is the regression analysis with model summary, ANOVA, Coefficients and multicollinearity for the implementation. The correlation matrix can be found in appendix 4. No correlations were at an unacceptable level.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.730[a]	.533	.442	1.445	.533	5.866	7	36	.000

a. Predictors: (Constant), Intangible, 16a CompaniesEstablished, 6 Timesparticipated, Satisfaction, 14 Educationlvl, Timepassed, StrategicHR

Figure 4.2.4.1 SPSS Output: Implementation Model Summary

Below follows the ANOVA and Coefficients for the regression analysis.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	85.773	7	12.253	5.866	.000[b]
	Residual	75.204	36	2.089		
	Total	160.977	43			

a. Dependent Variable: 17a Implementation

b. Predictors: (Constant), Intangible, 16a CompaniesEstablished, 6 Timesparticipated, Satisfaction, 14 Educationlvl, Timepassed, StrategicHR

Figure 4.2.4.2 SPSS Output: Implementation ANOVA

The model is significant at a 0.01 level.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-1.398	1.542		-.906	.371					
	6 Timesparticipated	.280	.440	.086	.636	.529	.217	.105	.072	.712	1.404
	Timepassed	-.168	.130	-.177	-1.293	.204	-.214	-.211	-.147	.696	1.437
	14 Educationlvl	.009	.288	.004	.031	.975	-.030	.005	.004	.758	1.319
	16a CompaniesEstablished	.067	.117	.078	.571	.572	.057	.095	.065	.693	1.443
	Satisfaction	.560	.181	.405	3.094	.004	.603	.458	.352	.756	1.323
	StrategicHR	.126	.154	.118	.818	.419	.345	.135	.093	.621	1.611
	Intangible	.398	.156	.351	2.545	.015	.533	.390	.290	.682	1.467

a. Dependent Variable: 17a Implementation

Figure 4.2.4.3 SPSS Output: Implementation Coefficients

VIF is well within range. The highest value here is 1.611.

Significant variables are:

- Satisfaction
- Intangible Effects

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions							
				(Constant)	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	Satisfaction	StrategicHR	Intangible
1	1	6.675	1.000	.00	.00	.00	.00	.00	.00	.00	.00
	2	.483	3.717	.00	.01	.04	.00	.51	.00	.00	.01
	3	.376	4.216	.00	.02	.10	.00	.03	.00	.39	.01
	4	.155	6.558	.00	.13	.01	.09	.00	.00	.11	.32
	5	.148	6.705	.00	.06	.59	.01	.35	.04	.12	.02
	6	.111	7.743	.00	.67	.04	.05	.08	.01	.31	.09
	7	.037	13.401	.00	.08	.04	.39	.00	.60	.00	.50
	8	.015	21.327	.99	.03	.17	.47	.02	.33	.06	.04

a. Dependent Variable: 17a Implementation

Exhibit 4.2.4.4 SPSS Output: Implementation Collinearity Diagnostics

The variance propositions in the multicollinearity table are also acceptable.

4.2.5 Economic Effects

Due to the fact that there were two regression analyses for economic effects, this section has been split into two.

4.2.5.1 Regression 1 (intangible, strategic and satisfaction)

Below is the regression analysis with model summary, ANOVA, Coefficients and multicollinearity for the economic effects. The correlation matrix can be found in the appendix. No correlations were at an unacceptable level.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.354[a]	.126	-.044	.85979	.126	.739	7	36	.641

a. Predictors: (Constant), Intangible, 16a CompaniesEstablished, 6 Timesparticipated, Satisfaction, 14 Educationlvl, Timepassed, StrategicHR

Figure 4.2.5.1.1 SPSS Output: Economic Effects 1 Model Summary

R Square is not high, and neither is adjusted R Square. The latter is negative. There is little sign of multicollinearity here.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.824	7	.546	.739	.641[b]
	Residual	26.612	36	.739		
	Total	30.436	43			

a. Dependent Variable: Economic

b. Predictors: (Constant), Intangible, 16a CompaniesEstablished, 6 Timesparticipated, Satisfaction, 14 Educationlvl, Timepassed, StrategicHR

Figure 4.2.5.1.2 SPSS Output: Economic Effects 1 ANOVA

The model is not significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.110	.917		5.570	.000					
	6 Timesparticipated	-.381	.262	-.269	-1.455	.154	-.165	-.236	-.227	.712	1.404
	Timepassed	.022	.078	.054	.288	.775	.012	.048	.045	.696	1.437
	14 Educationlvl	-.063	.171	-.065	-.365	.717	.013	-.061	-.057	.758	1.319
	16a CompaniesEstablished	-.007	.069	-.018	-.096	.924	.051	-.016	-.015	.693	1.443
	Satisfaction	.069	.108	.115	.644	.524	.076	.107	.100	.756	1.323
	StrategicHR	.145	.092	.313	1.584	.122	.130	.255	.247	.621	1.611
	Intangible	-.115	.093	-.233	-1.234	.225	-.140	-.201	-.192	.682	1.467

a. Dependent Variable: Economic

Figure 4.2.5.1.3 SPSS Output: Coefficients for Economic Effects

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions							
				(Constant)	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	Satisfaction	StrategicHR	Intangible
1	1	6.675	1.000	.00	.00	.00	.00	.00	.00	.00	.00
	2	.483	3.717	.00	.01	.04	.00	.51	.00	.00	.01
	3	.376	4.216	.00	.02	.10	.00	.03	.00	.39	.01
	4	.155	6.558	.00	.13	.01	.09	.00	.00	.11	.32
	5	.148	6.705	.00	.06	.59	.01	.35	.04	.12	.02
	6	.111	7.743	.00	.67	.04	.05	.08	.01	.31	.09
	7	.037	13.401	.00	.08	.04	.39	.00	.60	.00	.50
	8	.015	21.327	.99	.03	.17	.47	.02	.33	.06	.04

a. Dependent Variable: Economic

Figure 4.2.5.1.4 SPSS Output: Economic Effects Collinearity Diagnostics

4.2.5.2 Regression 2 (implementation)

Below is the regression analysis with model summary, ANOVA, Coefficients and multicollinearity for the economic effects. The correlation matrix can be found in the appendix. No correlations were at an unacceptable level.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.209[a]	.044	-.082	.87520	.044	.347	5	38	.881

a. Predictors: (Constant), 17a Implementation, 14 Educationlvl, 16a CompaniesEstablished, 6 Timesparticipated, Timepassed

Figure 4.2.5.2.1 SPSS Output: Economic Effects 2 Model Summary

R Square is not high, and neither is adjusted R Square. The latter is negative. There is little sign of multicollinearity here.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.329	5	.266	.347	.881[b]
	Residual	29.107	38	.766		
	Total	30.436	43			

a. Dependent Variable: Economic

b. Predictors: (Constant), 17a Implementation, 14 Educationlvl, 16a CompaniesEstablished, 6 Timesparticipated, Timepassed

Figure 4.2.5.2.2 SPSS Output: Economic Effects 2 ANOVA

The model is not significant.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.088	.703		7.240	.000					
	6 Timesparticipated	-.237	.239	-.167	-.993	.327	-.165	-.159	-.157	.886	1.129
	Timepassed	-.024	.078	-.057	-.303	.763	.012	-.049	-.048	.710	1.409
	14 Educationlvl	.030	.162	.032	.188	.852	.013	.030	.030	.886	1.129
	16a CompaniesEstablished	.037	.068	.099	.538	.594	.051	.087	.085	.743	1.345
	17a Implementation	-.042	.074	-.097	-.570	.572	-.116	-.092	-.090	.876	1.142

a. Dependent Variable: Economic

Figure 4.2.5.2.3 SPSS Output: Economic Effects 2 Coefficients

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	17a Implementation
1	1	4.993	1.000	.00	.01	.01	.00	.01	.01
	2	.474	3.247	.00	.02	.04	.00	.48	.06
	3	.241	4.548	.01	.00	.32	.01	.36	.23
	4	.161	5.562	.00	.45	.15	.02	.04	.47
	5	.107	6.815	.03	.51	.21	.22	.05	.06
	6	.023	14.617	.96	.00	.27	.76	.06	.17

a. Dependent Variable: Economic

Figure 4.2.5.2.4 SPSS Output: Economic Effects 2 Collinearity Diagnostics

4.3 Statistical Power

This section will present the statistical power calculations presented in chapter 3. The sub-chapter have been divided into sub sections for each of the dependent variables in their respective regression analyses.

4.3.1 Satisfaction

For satisfaction, the statistical power analysis yielded the following results:

Probability level 0.05	Probability level 0.1
1.0	**1.0**

Table 4.3.1 Satisfaction Probability Levels

A result of 1 is the maximum outcome, and robustness can be determined at a very high level.

4.3.2 Strategic Effects

For strategic effects, the statistical power analysis yielded the following results:

Probability level 0.05	Probability level 0.1
0.950	**0.979**

Table 4.3.2 Strategic Effects Probability Levels

These numbers indicate a solid robustness of the findings from this analysis.

4.3.3 Intangible effects

For intangible effects, the statistical power analysis yielded the following results:

Probability level 0.05	Probability level 0.1
0.993	**0.998**

Table 4.3.3 Intangible Effects Probability Levels

These numbers indicate a solid robustness of the findings from this analysis.

4.3.4 Implementation

For implementation, the statistical power analysis yielded the following results:

Probability level 0.05	Probability level 0.1
0.998	**0.999**

Table 4.3.4 Implementation Probability Levels

These numbers indicate a solid robustness of the findings from this analysis.

4.3.5 Economic Effects

Due to the fact that 'economic effects' was the dependent variable in two regression analyses, the statistical power test had to be computed twice. The results follow below:

Dependent	Probability level 0.05	Probability level 0.1
Implementation	**0.109**	**0.193**
Satisfaction **Strategic Effects** **Intangible Effects**	**0.287**	**0.421**

Table 4.3.5 Economic Effects Probability Levels

Neither of the regressions results with economic effects as the dependent variable show sufficiently robustness in the statistical power tests.

4.4 Summary

Due to the complications involved with having such a large share of dependent and independent variables, the following table will sum up the significant results for each of the dependent variables:

Dependent Variable	R^2	Independent/Control Variable	Hypothesis Number	Significance	Confidence to reject H0	Beta	VIF
Satisfaction	0.750	Commitment of Entrepreneur - Ideological	2a	0.004	98%	0.353	1.821
		Perceived Professionalism of Students	1a	0.006	98%	0.344	1.899
		Time Passed	Control	0.032	95%	-0.221	1.326
		Practicality of Recommendations	3a	0.048	95%	0.229	1.703
Strategic Effects	0.405	Times Participated	Control	0.017	98%	0.367	1.209
Intangible Effects	0.491	Commitment of Entrepreneur – Ideological	2c	0.010	98%	0.452	1.821
		Education Level of Entrepreneur	Control	0.010	98%	-0.356	1.144
		Practicality of Recommendations	3c	0.074	90%	0.295	1.703
		Satisfaction	4	0.004	98%	0.405	1.323

Implementation	0.533	Intangible Effects	6	0.015	98%	0.351	1.467
Economic Effects		No significant variables	-	-	-	-	-

Table 4.4 Significant Results for the Dependent Variables

For the results marked in green, the H0 can be rejected at a significance level of 0.02. For the results marked in yellow, the H0 can be rejected at a significance level of 0.05. For the results marked in red, the H0 can be rejected at a significance level of 0.1. The results not included above were not significant and H0 could for those variables not be rejected.

Once again, it should be emphasised that due to the small sample size, the results are still not fully valid for generalisation.

The descriptive statistics concerning the dependent variables considered seem to indicate that the majority of participants indicated their satisfaction from participation, only a small minority engaged students in their work after the course ended, around half of the participants acknowledge intangible benefits, but only a third indicated actually implementing the recommendations. Finally, in terms of economic outcomes half indicated positive outcomes, while the other half indicated it was difficult for them to evaluate this. These two factors, as well as the fact that more respondents reported positive economic effects than actually implemented the recommendation – may indicate a difficulty in tracing economic effects to participation and a general attempt to provide "satisfying" results for the researcher. This may be linked to a need to match expectations based on high levels of satisfaction.

Chapter 5 Discussion

This section aims to discuss the findings in section 2. It will do so by initially discussing the findings from the descriptive analysis, followed by an in depth discussion of the findings for each of the regression analyses. The section will be ended with a summary of the discussion and findings.

5.1 Descriptive Analysis

5.1.1 Satisfaction

Satisfaction was by far the variable with the most positive results. All of the items used (after factor loading elimination) had a median of 6 and a mean between 5.3 and 5.5. This proves that the majority of the participating firms in the programs were satisfied with the experience.

Romney and Cherrington (1993) used satisfied; use again, recommend, and reasonable time usage as measures of satisfaction. As shown above, a lot of these items were used and loaded in the factor analysis. Some of the items that are similar in both their research and the research in this paper are: Participate Again (18a), Recommend to others (18b), Good use of time (18c). The respondent distribution for these is shown below:

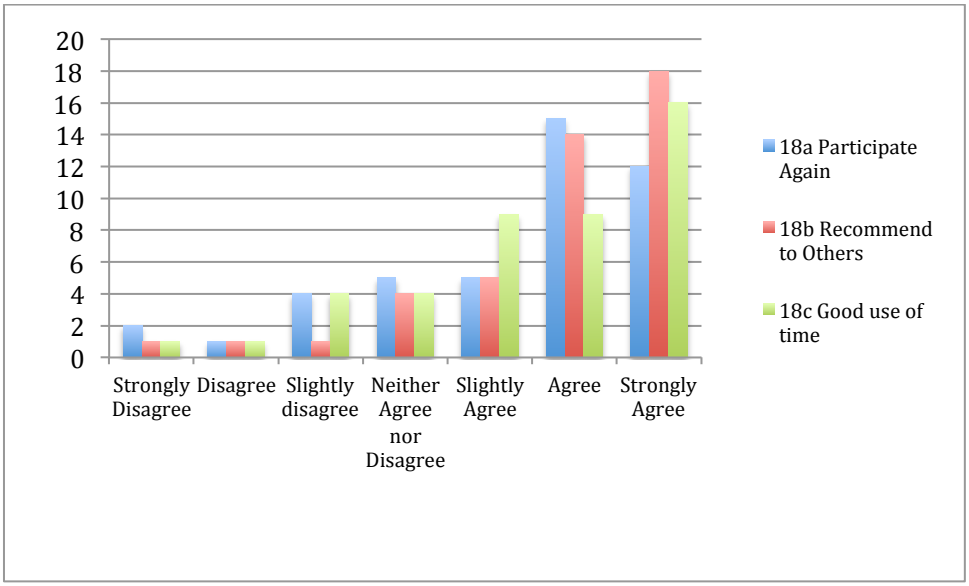


Figure 5.1.1.1 Satisfactions Distribution

As one can see here, there is a heavy emphasis on three choices that represent some level of agreement the items. The pie charts below illustrate this further:

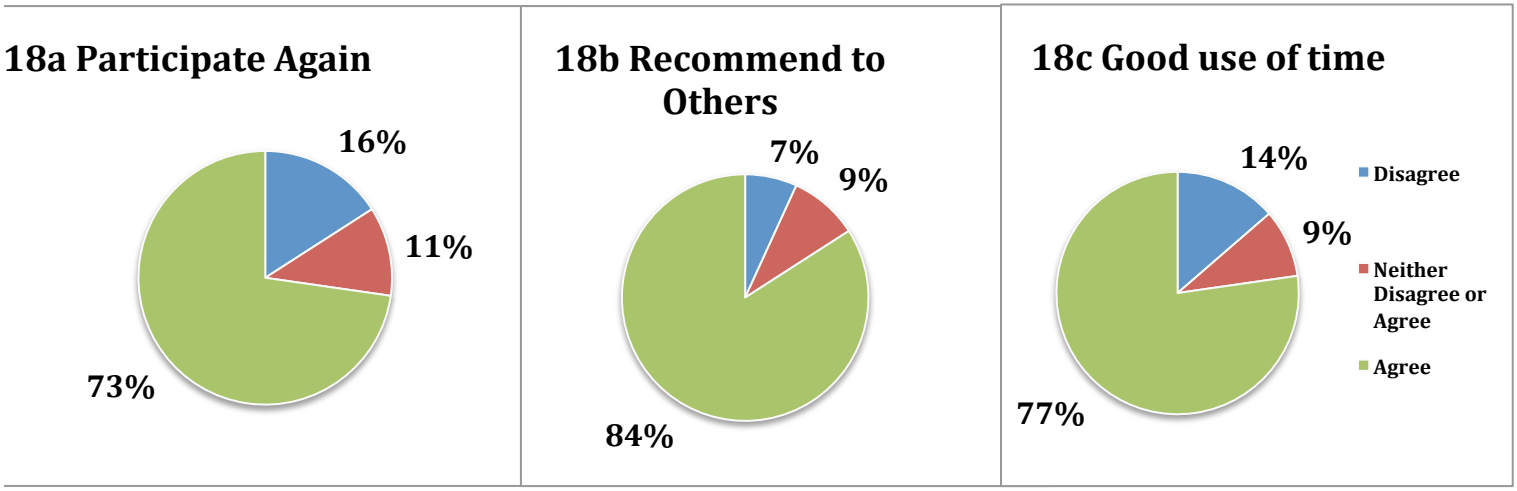


Figure 5.1.1.2 Satisfaction Items

Between 73 and 84 per cent of the participants were satisfied with the program. Romney and Cherrington (1993) found that 80% would use again, 80% would recommend to others and 93% found it to be a reasonable use of their time. These results are very close to the findings above and hence reinforce these initial findings.

This paper also examined whether it was a good choice to participate and whether this was something the company needed at the time. These had very similar results to the findings above.

Gregory (2010) pointed to the usefulness of the insights and ideas as a measure of satisfaction. He also discusses the overall satisfaction. All the other papers presented in the literary review regard the participating firms in their studies as satisfied (Brindley & Ritchie, 2000; Burr and Solomon, 1977; Weinstein et. al., 1992; Kiesner, 1987; Lacho, 2009; Dumouchel, 2010).

This paper can further reinforce the previous research by pointing to the participants of International Laboratory and Gründerlab being very satisfied.

5.1.2 Strategic Effects – Recruitment

The reasons why this variable only includes the two items above may be because the economic and intangible effects incorporate most of the strategic effects examined. Due to the narrowness of the variable, this paper would argue that 'strategic effects' is no longer an appropriate description of this variable. Recruitment would be a more suitable term as all the items involved pertain to this. For the remainder of the paper, this variable will be discussed as a recruitment variable.

The analysis of the business development acceleration (Sang Suk and Osteryoung, 2004), the concrete plan and recommendations (Lacho, 2009; Weinstein, 1992), the students' ability to provide a strategic overview (Sonfield, 1981) were all eliminated in the factor analysis. Most of the reason for this was that they loaded for other variables than the strategic one.

Chan et al. (1994), McDougall (2014) and Pittaway and Cope (2007) all emphasised the opportunity for recruitment that could be found in the consultancy programs. The recruitment variables were included in the analysis and yielded the following distribution:

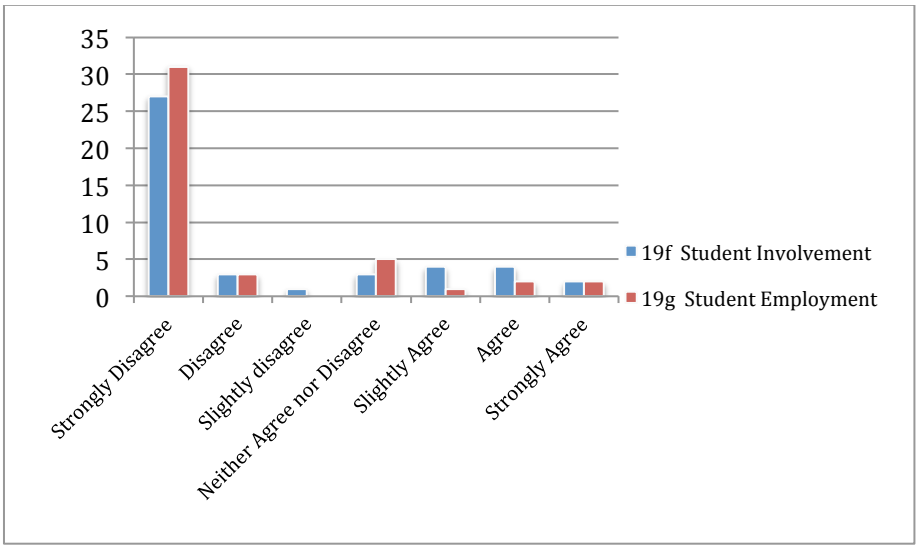
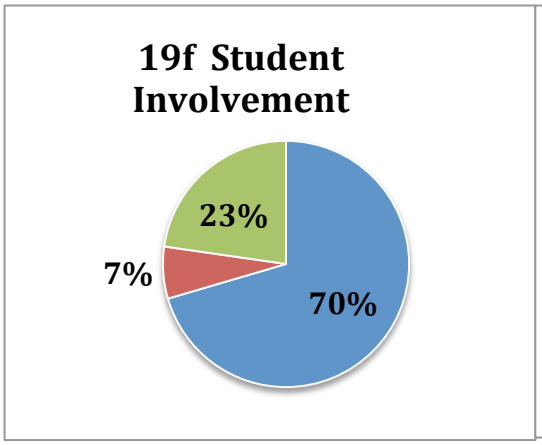


Figure 5.1.2.1 Strategic Effects - Recruitment Distribution

As one can see, the majority of the companies did not involve or hire the students after the program ended. To what extent this was a choice by students or the company is uncertain, but the majority of the students were regardless of this not hired. The distribution between agree, disagree and neither agreed or disagree is as follows:



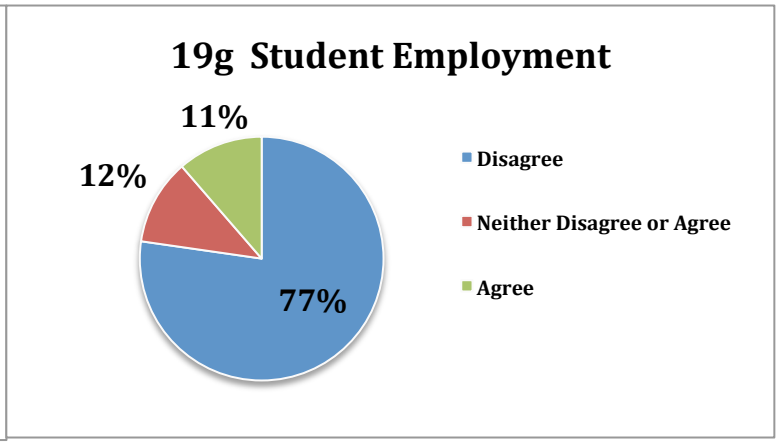


Figure 5.1.2.2 Student Involvement *Figure 5.1.2.3 Student Employment*

This shows that 23% (10 respondents) state that they have involved students in the company after the project ended. 11% (5 respondents) state that they have employed one or more of the students who participated in the program.

This suggests that there is a level of ongoing recruitment, but the number of students employed by the firm after the program is still quite low.

5.1.3 Intangible Effects

As mentioned in the literary review, Hynes and Richardsen (2007) point to the increased level of self-awareness, analytical and critical thinking as well as improved decision-making skills.

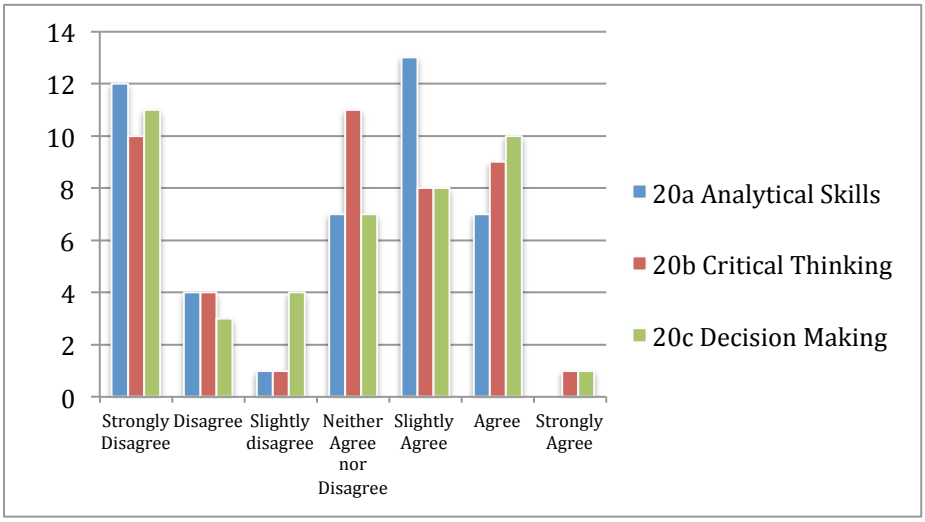


Figure 5.1.3.1 Intangible Effects Distribution

From the results of the descriptive analysis of intangible effects; analytical skills (20a), critical thinking (20b) and decision-making (20c) all show a mean of 3.6-3.7 and a median of

4. Below is a frequency distribution for the items. These were, as shown in chapter 4, the weakest results out of all the dependent variables. They are still, as will be presented below, positive.

Dividing the results into 3 categories, the distribution is as follows:

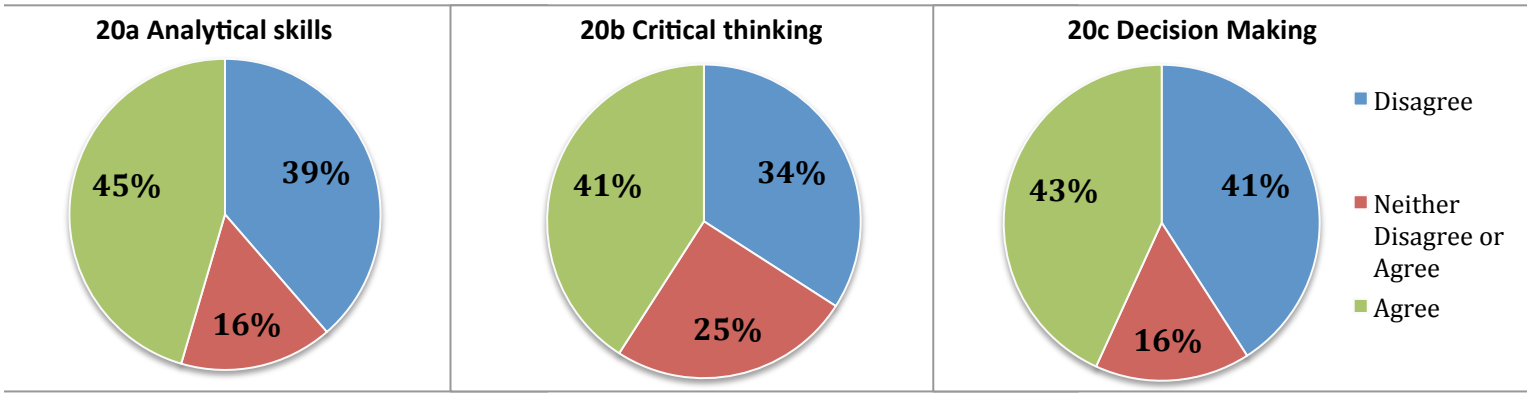


Figure 5.1.3.1 Intangible Effects Items

For all, the majority of the participants felt that they experienced these three intangible effects. The closest was for decision-making skills, with just two per cent separating 'agree' and 'disagree'. These results support what Hynes and Richardson (2007) argued.

The three strongest results were found for 20d (analyse market segments) 20e (strategic options) and 20f (Strategic planning process). The all had means between 4.1 and 4.4 and a median of 5. The distribution of respondents looks like this:

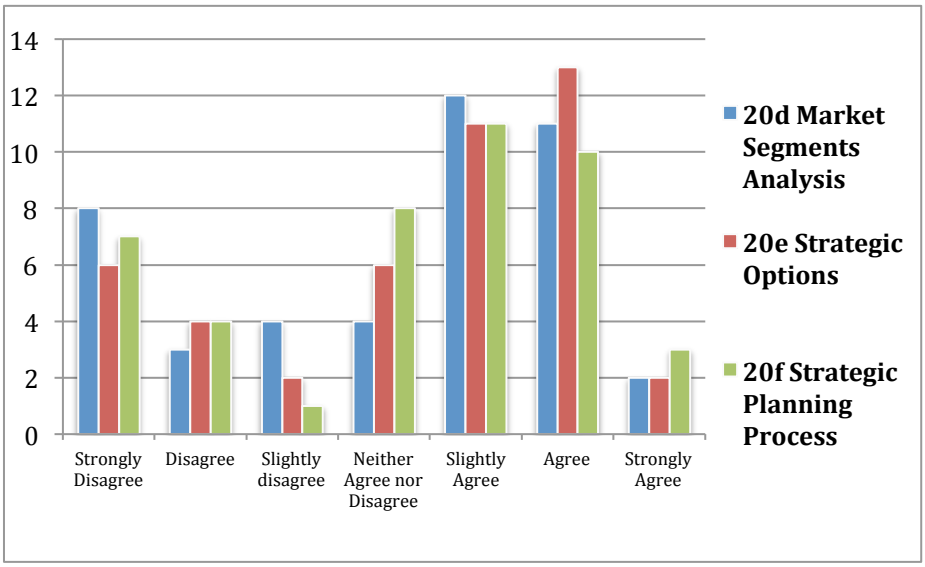


Figure 5.1.3.3 Intangible Effects Distribution 2

As can be seen from the diagram, the emphasis in the responses are on strongly disagree, neither agree nor disagree, slightly agree and agree (the latter two being the most frequent)

Dividing the results into 3 categories, the distribution is as follows:

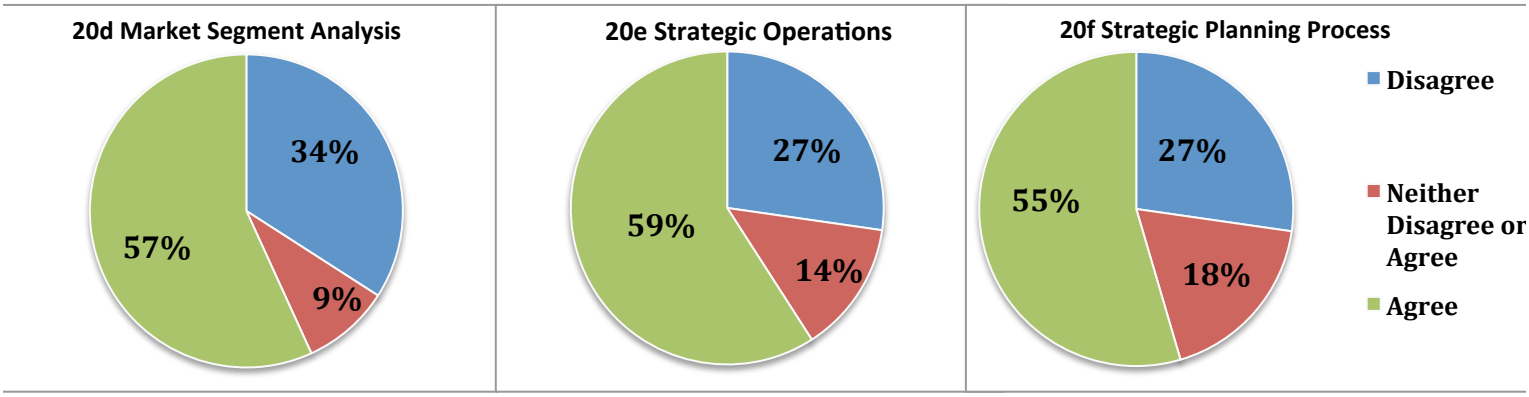


Figure 5.1.3.4 Intangible Effects Items 2

The results here show very clearly that between 55% and 60% of the sample experience these effects. These are some of the time saving items that were discussed by Sonfield (1981), they also emphasise the academic perspective and the potential synergy with the academic perspective found in the outlook of the entrepreneur. Sonfield (1981) points gain a strong reinforcement from the findings from the survey in this paper.

The final item to the variable looks at changes in the underlying assumptions (20g). Much of the literature emphasises this (Gregory (2010), Sonfield (1981), Mazura and Othman (2011), Lacho (2009). This is all about reframing narratives and discovering things that the entrepreneurs did not really know needed to be discovered. The respondent distribution for the dimension is displayed in the table below:

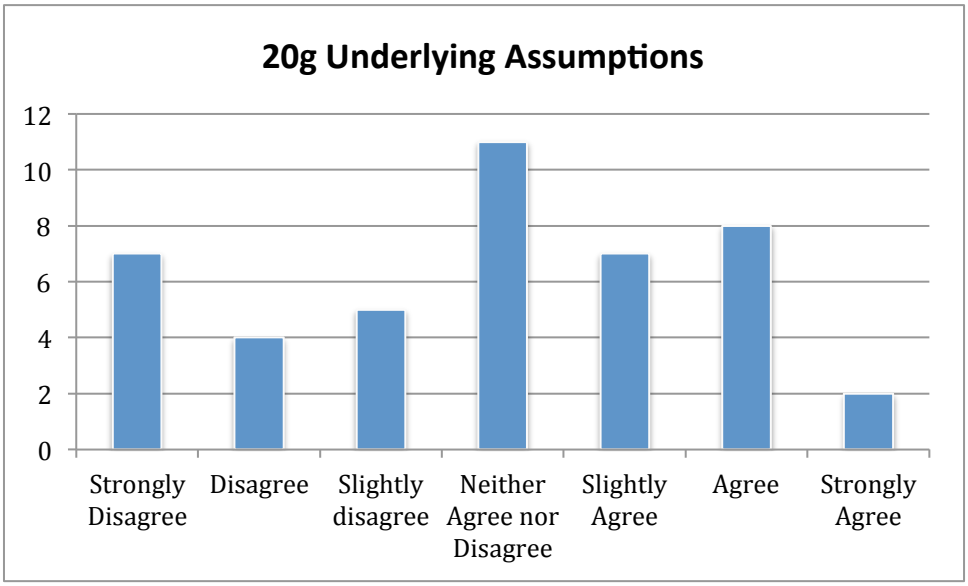


Figure 5.1.3.5 Underlying Assumptions Distribution

As one can see, the responses here are spread more evenly than for the other items.

The agree-disagree-distribution for this item is displayed in the chart below:

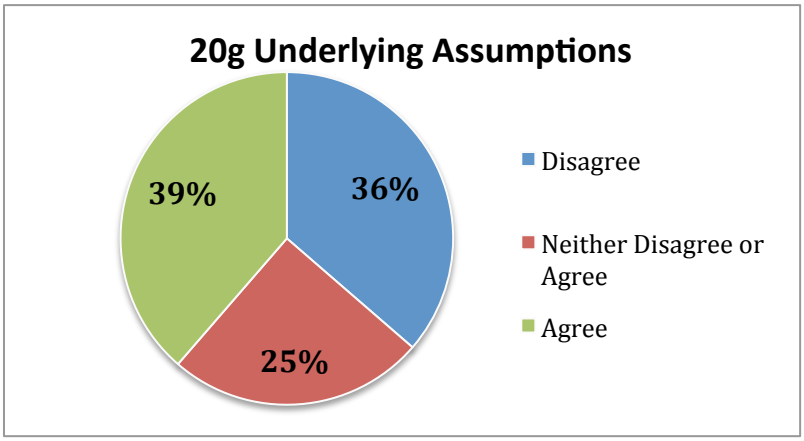


Figure 5.1.3.6 Underlying Assumptions

As can be seen, there is a fairly even split between agree and disagree. At this point two things should be emphasised:

- The fact that 39% had a reframing of underlying assumptions shows excellent results.
- The large share that is in the middle category may be due to the complexity of the question. It is difficult to argue in which direction this group would lean.

All in all, this paper has found that a majority of the participants in the program have experienced positive intangible effects from participating in the program.

5.1.4 Implementation

As shown in the result section, more people disagreed (50%) with the question than agreed (34%). Again, it should be emphasised that the question used was not whether they partly or to some extend implemented the recommendations, but if they **fully** implemented the recommendations. A brief look at the results of other items, such as partial implementation or attempted to implement, shows higher results for implementation (although not remarkably higher).

Having 34% of the entrepreneurs participating fully implement the recommendations of the program must be seen as a strong effect regardless of 50% not implementing them. This means that one third of all companies that participate in the company end up with recommendations that are good enough for them to choose to implement these in their

company. Below are two elements that could be expected to account for some firms not implementing the recommendations:

- *The varied level of the students* – Not all students are equally excellent academically (or otherwise). As a result, the quality of some of the recommendations may be lower than others. These recommendations may be less likely to be implemented.
- *Time since participation* – Some of the companies participated in the course only a few months ago. These companies may not have had the time to implement the recommendations fully at this point (but may do so in the future).

Regardless, the research done in this project shows that the education programs in question yield results that are used by a substantial share of the companies who participate.

5.1.5 Economic Effects

Cooke and Williams (2004) emphasised the cost savings associated with the results. These factors did not load with the other economic effects in this paper and significant results were not found. This paper would suggest that some of the blame for this could be attributed to the lack of awareness around the cost side of the business in terms of the consultancy project and the difficulty in predicting the cost development at an early stage in the business life cycle, (Carter & Jones-Evans, 2006). Attributing what particular development occurred as a result of the program and what was attributed to other factors may be even more difficult to predict. In this way, the income side of things should be easier to attribute to events.

For income, the distributions of responses are as follows:

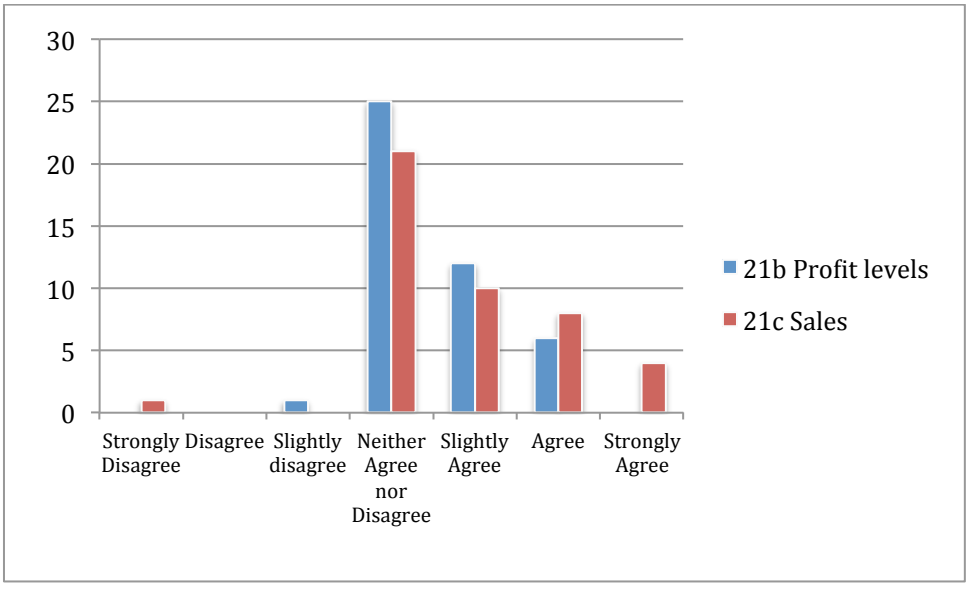


Figure 5.1.5.1 Economic Effects Distribution 1

As one can see, the results are skewed to the right. In total, one respondent slightly disagreed with a profit increase and strongly disagreed with a sales increase (same respondent for both answers). Apart from that, the participating firms who have an opinion seem to agree:

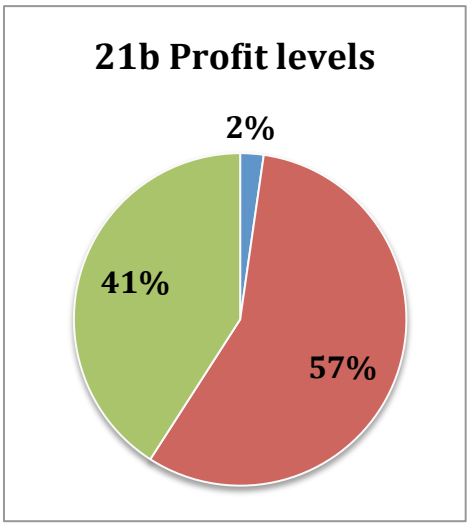


Figure 5.1.5.2 Profit Levels

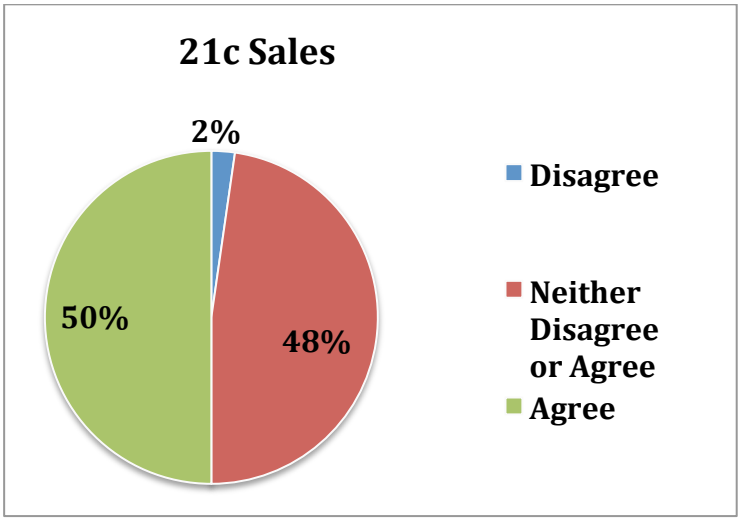


Figure 5.1.5.3 Sales

What is even more encouraging for the programs is that 41% agree to an increase in profits and 50% to an increase in sales.

The other items researched that pertain to economic effects were new customers and new business partners:

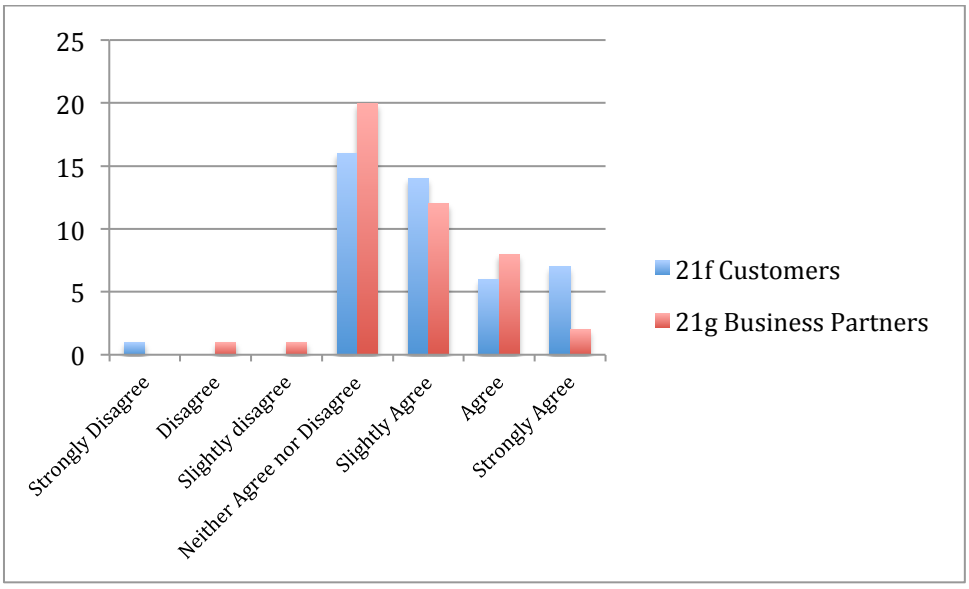


Figure 5.1.5.4 Economic Effects Distribution 2

The distribution looks rather similar to the other economic effects.

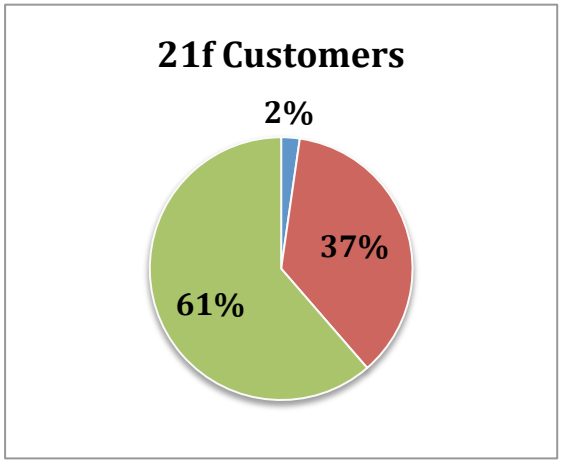


Figure 5.1.5.5 Customers

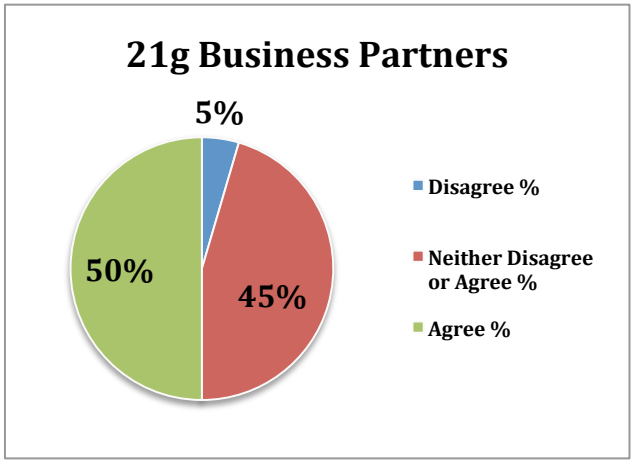


Figure 5.1.5.6 Business Partners

Also here, the agree-percentage for both items is very high.

What should however be emphasised here is that, even though the results have indicated positive outcomes, it is clear such a large group is unsure and the group that does indicate substantial outcomes is larger than the group that stated that they implemented the recommendations received in the program. This may indicate (as mentioned in section 4.4) that the effects were difficult to trace and that the respondents may have been attempting to give the responses that they expected the researchers wanted. The former is similar to what was experienced by McMullan et. al. (1986) when asking the participating firms to 'guesstimate' the value of economic effects, which was discussed in the literary review. The difference is that McMullan et al. (1986) asked the respondents to 'guesstimate' a monetary result of participating, while this paper has only asked for direction. Regardless, it appears that many participants struggle to give a concrete and 'correct' answer to these questions. This may make the suitability of this type of question debatable.

It is therefore difficult for this paper to, with any level of certainty, reinforce or reject previous research on the field that argue that these effects are positive (Pittaway and Cope, 2007; Solomon and Weaver, 1983; Robinson et. al., 2010: Eltrott, 1987; Chrisman et. al., 1985; Haines Jr., 1988).

5.1.6 Overall

In summary, the descriptive analyses and their discussion, the following can be suggested:

1. The majority of the participating firms were satisfied with the experience.
2. Half of the participating firms experienced intangible effects from participating.
3. Only a small minority engaged the students after the course ended.
4. Strategic Effects should be replaced by variable: recruitment (which was only part of the strategic variable).
5. The findings for economic effects were quite unclear. This may be due to several reasons. This paper suggests that it could be due to the respondents may struggle to trace the economic effects and some may try to give the responses they believe are in line with what the researcher wants to achieve.
6. One third of the participating companies implemented the recommendations put forward by the students.

As a result of the discussion above and the factor analysis presented in chapter 3, this paper suggests the following as a good way of measuring effects on companies participating in student consulting programs:

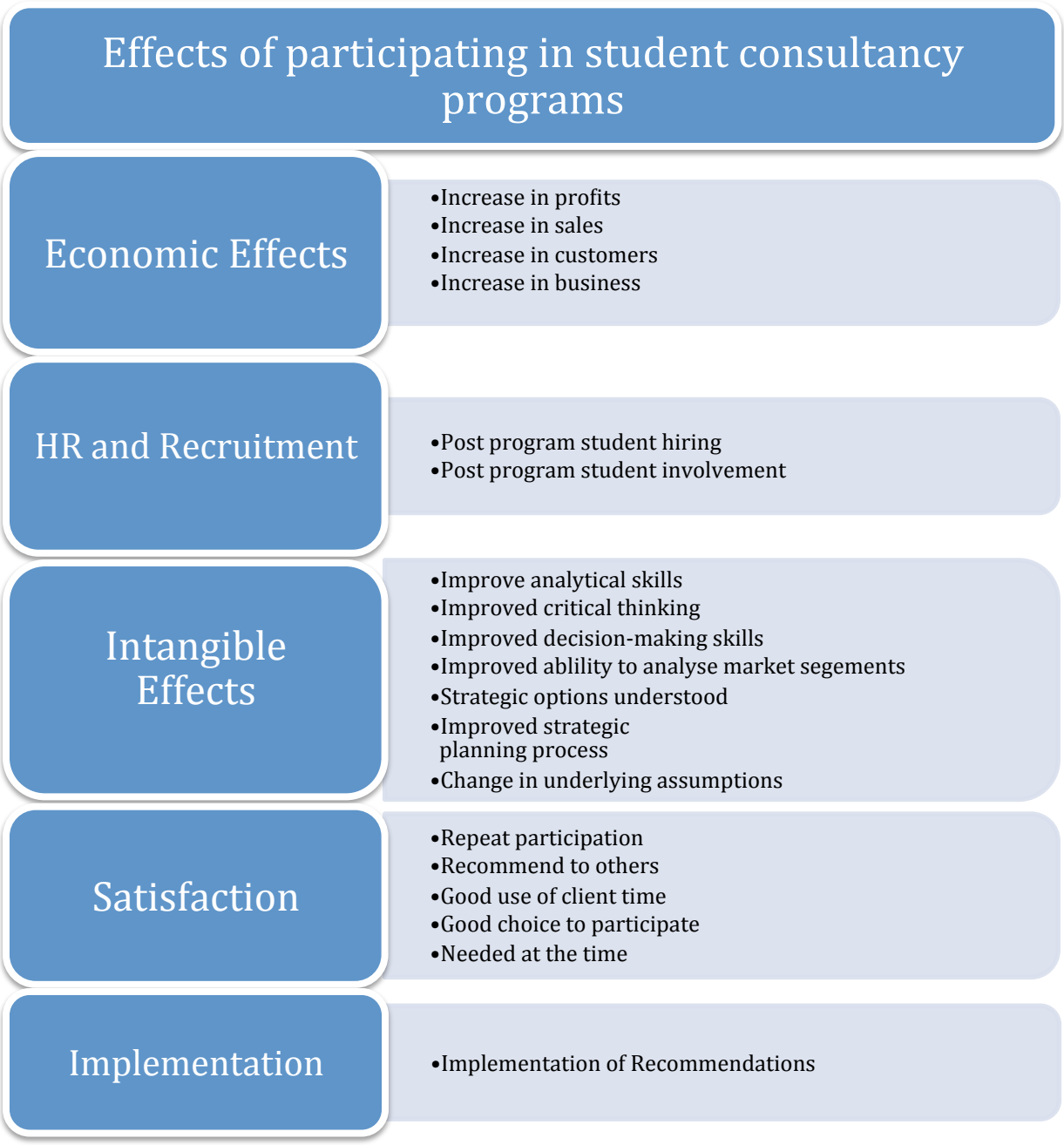


Figure 5.1.6 Refined Variable Overview

The main changes and refinements from the original model in figure 2.6.1 (apart from the design) are the simplification and increased level of precision for each of the items. In addition to this, the paper suggests that adding implementation, as a variable in its own right, gives a good overview of the more direct and practical usefulness of the recommendations the participating firm receives from participating in the program.

5.2 Regression Analysis

This section will discuss the findings from the regression analyses. It will do so by looking into the results of each of the six regression analyses that were run and discuss and compare these with previous findings, the hypotheses and relevant literature.

5.2.1 Satisfaction

As presented in table 4.8, the regression results for satisfaction yielded the following significant independent variables (at 98% confidence):

- Commitment of Entrepreneur – Ideological
- Perceived professionalism of students

The former is based on dimension 10a, which argues whether the entrepreneur has **ideological manifestations** towards academic programs in general. As the results show, the entrepreneurs showed a relationship between positive attitudes towards academic involvement in small firms and satisfaction.

If the participating firm has a positive attitude towards student consulting programs, they would be more likely to be satisfied when participating in one. Based on these findings, the paper would suggest that the selection process associated with finding participating firms for the program is even more vital. It could also be argued that choosing firms that have a positive attitude to the programs will be more fruitful in terms of client satisfaction. In an ideal world, the participating firms are all satisfied. This would greatly benefit all interested parties. Knowing what influences satisfaction could bring the program one step closer to this goal. There are many ways in which the entrepreneur could have faith in the program. Believing that it has positive effects on his or her company is just one. Another important reason could be, believing in the contribution it could make to the students. A third could be a believing that participation can contribute to academia.
The entrepreneurs adding to academia with their participation, and contributing to the students' development through providing them with valuable real life job experience could have an effect on their level of fulfilment and satisfaction. For the firms who participate, this can be a way of being socially responsible by contributing to society. This supports Donaldson (1982) social contract theory about companies being ethically obliged to give back to the communities which have given them an opportunity to create and sustain an

entrepreneurial venture. This commitment to participation may make the entrepreneurs happy with participating as they are contributing to "the greater good". As a result the participating entrepreneurs are left satisfied from their participation in the program.

The perceived professionalism of students is based on a question of whether the students executed the task in a professional way or not. This is one of the variables that Weinstein et al. (1992) measured. He found a significant relationship between the business knowledge of the students and satisfaction. Since this paper measured these variables slightly differently, the business knowledge variable does resemble slightly the professionalism variable used in the research for this paper. This is mainly due to the fact that the professionalism of business students should be closely linked to how well they know (and are able to use) their profession. Since the participating students were all business students, their profession relates to business studies, which entails marketing, strategy, budgeting, accounting etc. The finding of a relationship between professionalism and satisfaction can as a result be seen to reinforce the research of Weinstein et al. (1992). This result may be the basis for an interesting discussion regarding what the entrepreneur sees as professionalism and how the students can be perceived as more professional. This paper will not take this discussion further as it is besides the purpose set in the research question.

In addition to the two variables presented below, two more variables were significant at 95% confidence. These variables were:

- Time Passed
- Practicality of recommendations

The former is a control variable, which measures years since the respondent participated in the program. The findings in the analysis show a negative relationship between time passed and satisfaction. This means that, the more time that passes from participation, the less satisfied the participating firm claims to be. This paper could argue that there may be two reasons for this:

- Since the programs have run for 10 years, the earlier rounds of the program may not have been as good as the more recent rounds. It may show a learning curve in the program.
- The more time has passed, the harder it could be for participants to recall details from the program.

The second of the weaker relationships was an independent variable that asked the entrepreneurs if the students provided them with practical information that was useful to their work. That the practical applicability of the information is important to satisfaction is hardly a surprise, but it is still interesting. It could be argued that entrepreneurs are fairly practical in nature (Carter & Jones-Evans, 2006) and hence the practicality of the recommendations they receive should be rather important. This paper would suggest that this pertains especially to the applicability. Since they do not have the consultant there on a permanent basis, having practical recommendations that they themselves are able to implement would make it more likely for them to be satisfied. It should also be noted that Weinstein et al. (1996) also found significant relationships between practicality of recommendations and satisfactions, and the findings in this research support those findings.

All in all, the independent variables that affect satisfaction coincided well with the previous research and therefore confirm and reinforce the findings presented in the literature review.

5.2.2 Recruitment - HR

For recruitment, there were no independent variables that had a significant causal relationship to this variable (at a 95% confidence level or higher).
There are several reasons which may explain why this is the case. Firstly, there may in fact be no relationship between the two or the sample may be too small.
Secondly, it may be that hiring a student is very much based on the need and situation of the company and entrepreneur when participating in the program. This may overrule all the other dependent variables and hence make the influence of other variables less significant. A rephrasing of the question to "if you had the means/need to hire a new employee, would you have hired one of the participating students on your team?" could have been a solution. Another solution could have been to have need for new staff as a control variable in the regression analysis.

The only significant result found in the regression analysis for recruitment was the control variable; **times participated**. The result indicates that the more times a company has participated, the more strategic effects the program has yielded. This paper suggests two explanations that could account for some of this relationship:

- The respondents accumulate have participated more times and are more likely to encounter a student they wish to hire or involve further.
- The respondents who are looking for a graduate to hire are more likely to participate more than one time.

Both of these are potential viable explanations that could account for this relationship.

5.2.3 Intangible Effects

As presented in table 4.8, the regression results for intangible effects yielded the following significant independent variables (at 98% confidence):

- Commitment of entrepreneur – Ideological
- Education level of entrepreneur

The former was also found to have a significant impact on satisfaction.
This variable measures the entrepreneurs' **ideological commitment** to the program. It could be argued that if the entrepreneurs have faith in student consultancy programs, they are likely to expect positive effects from participating in the programs. This is turn can make the participating firms receptive to the learning potentials of the program for their firm. A general openness to the program can also translate into openness to reframe silent narratives or to learn and improve their own skills by showing a willingness to fully commit to what the program has to offer. This further argues the recruitment case discussion in section 5.2.1. It also argues the importance for the firm of fully committing in order to ensure the best possible effects of the program.

Another interesting finding pertains to the control variable **education level of the entrepreneur.** What was found in the analysis is that a higher education level of the entrepreneur leads to lower intangible effects for the participating firm. This could very easily be explained by the fact that people with higher education have more academic knowledge themselves. The only issue with this is that the higher academic knowledge does not have to be business knowledge and this makes it somewhat peculiar that the education level would affect these intangible effects negatively. There may however be more underlying reasons for the effects being larger with entrepreneurs with less education.
Previous research shows that education has an effect on entrepreneurial success (Dickson et al., 2008, Matlay, 2008, Robinson and Sexton, 1994, Sluis and Praag, 2008).

As mentioned in chapter 2, Robinson and Sexton (1994) argue that higher education leads to higher entrepreneurial success. This could argue the case for participants with higher education do not need the support that the program offers to the same extent as other participants.

This paper would however argue that this does not hold on the basis of the analysis above. There are two reasons for this. The first is that the majority of the sample for this paper is highly educated, and hence the sample of participants who do not have higher education is far too small to make such conclusions. Secondly, the participating entrepreneurs with higher education are not necessarily business educated. As a result, they may have very much to learn from the program.

What this paper would suggest is more likely is that the entrepreneurs with higher education are more indoctrinated under certain dogmatic approaches, and therefore biased against new inputs from the differing, and sometimes contrasting, academic field of business education. For example, it could be difficult to convince someone schooled in the hard sciences, that they have many things to learn from the softer fields of social sciences. Changing narratives and teaching new methods to the members of these participating firms may be much more difficult.

In addition to the variables above, one variable was found to be significant at a 90% confidence level. This variable was **practicality of recommendations**. This could suggest that some of the learning that the participating firm experiences, occur from reading and assessing the recommendations the students present. It may be difficult for people without a subject background to understand strategic thinking without it being put into context. Perhaps they gain more business understanding or sharpen their critical thinking from reading strategic assessments in the context of their own business. Another point could be that this gives them the inspiration to pursue further analyses and hence attain a better understanding of how to analyse markets. Perhaps it changed their underlying assumptions as to how their business is and should be operating. These are merely suggestions, but what is determined with 90% certainty is that the more practical the recommendations are, the more of the items that build up intangible effects get a positive boost.

The most reasonable assumption to make based on these findings is that since the recommendations are concrete practical examples of how issues surrounding the participating firms can be solved, they are valuable bases for learning how to handle such issues. As a result, the recommendations being practical will directly influence learning and hence intangible effects for the participating firm.

One implication of these findings is that it may be important for the program coordinators to help the students achieve the most practical recommendations possible. This can ensure greater intangible effects for the participating firms. This may argue the case for standardising some of the recommendations that the students are supposed to deliver. For instance, ensuring that the students end up with a step-by-step plan for the business could make the recommendations more practical. It may also support the notion of making sure that the goals of the program are in tune with what the entrepreneur wishes to uncover about his or her company. This provides the program with a set of issues, which it may need to handle and this may be summarised in the conflicting issues (presented in the table below):

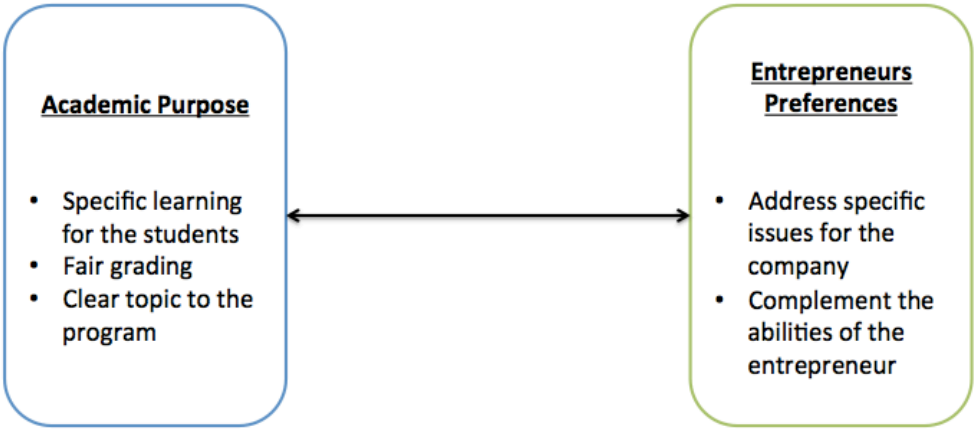


Figure 5.2.3 Conflicting Issues

Being an institution of learning, the university master's and bachelor's programs want to ensure that, when a student chooses the program, they will chose a clear topic of interest that they wish to learn more about. This will give the students an element of predictability that is necessary if the students are focused on the learning outcomes. Internationalisation Laboratory for instance wants to focus on issues pertaining to internationalisation of businesses, while Gründerlab wants to focus on the basic development of a business plan. Should the program be too flexible, it may lose some of the opportunities to address specific issues that are pertinent to academic learning. On the other hand, helping the entrepreneur with the aspects of entrepreneurship where the individual entrepreneur feels weak or

inadequate may give the individual more useful information that he or she can implement in his or her company.

What adds another nuance to this problem is that addressing specific issues with regards to the individual firm and entrepreneur may make it very difficult to grade evenly. Grading for student consultancy programs often requires very rigorous and comprehensive approaches (Cooke and Williams, 2004). This may make the grading less flexible. Some issues may be much more challenging for the students and some needs of the entrepreneur may be difficult to translate into concrete recommendations. If a flexible program has to be at the expense of fair grading, then changing this would be very difficult from a university perspective.

In order to avoid the abovementioned issues, it may be important to suggest a few things that can bring the two oppositions together (or at least facilitate situations with less conflicting interests). One such thing may be to tailor the recruitment to ensure that the participating firms' goals coincide with the plans for the program. Matching students' skill sets with the needs of the companies may make the recommendations more practical and hence more likely to be implemented. For instance, if a company wishes to expand into Latin America, ensuring that a Latin American student (should there be one available) is assigned to this particular company would render the recommendations more practical and useful to the entrepreneur, based on their knowledge of the area. The same could be applied to the study specialisations of the students (accounting, strategy, finance, entrepreneurship etc.) and the specific issues that the firms need practical recommendations on.

5.2.4 Implementation

For implementation, two variables were significant (both at a 98% confidence level). These variables were:

- Satisfaction
- Intangible Effects

Satisfaction had a positive coefficient, indicating that the more satisfied the participating firms are with participating in the program, the more likely they are to implement the recommendations. This provides an insight into the importance of leaving the participating firm satisfied with the results.

From Innovation Norway's point of view, for instance, the goal of the program is to make sure that the companies they work with get the necessary guidance to excel in their respective businesses. In order to fully benefit from the most direct contribution the program makes, the recommendations, they will need to be implemented in the businesses. The insight that the participating firms will be more likely to implement if satisfied will leave Innovation Norway (or whomever else would want the recommendations to be implemented) with a concrete notion to work with in order to achieve their goals.

One way to think of this is to link the results in this section to the results from the regression analysis where satisfaction was the dependent variable. These two put together suggest that if the entrepreneurs are committed to the program, the students behave in a professional way and the recommendations are practical, the participating firm is likely to be satisfied and as a result implement the recommendations. This will be elaborated further on in the summary.

The second significant variable was **intangible effects.** Like satisfaction, positive intangible effects seem to increase the likelihood of the recommendations being implemented by the participating firm.

Much like satisfaction, it could be argued that the parties that are interested in the recommendations being implemented (such as Innovation Norway) should focus on ensuring that the participating firms experience intangible effects from participating in the program.

As mentioned in section 5.2.3, the variables that influence intangible effects were commitment of entrepreneur (ideological), education level of participating entrepreneur and the practical recommendations. This means that the more committed the entrepreneur is and the lower his or her education level is, the more likely they are to experience intangible effects that cause them to implement the recommendations. These findings further emphasises what section 5.2.3 argued that selecting the right companies to participate in the program is essential to achieving the desired outcome. It also suggests again that the focus should be on producing practical recommendations that provide the participating firms with usable and understandable tools for improving and/or developing into better companies.

5.2.5 Economic Effects

Economic Effects had no significant findings in the regression analysis. There could be a few reasons why there were no such significant findings.

One reason could be that there may not be a strong relationship between the selected independent variables and the economic effects a company experiences from participating in the program.

A second reason could be (as mentioned chapter 4.4) that the results do not truly represent the economic effect of participating in the program. It could be argued to be due to the challenging nature of collecting reliable data about such a complex phenomenon at this level of analysis. A few reasons for this could be:

- It is based on the entrepreneur's opinion.
- It may be difficult for the entrepreneurs to isolate and estimate the economic effects of participating in the program.
- The respondents could be trying to provide the researchers with the findings that they believe the researchers are looking for. In this way, the respondents wish to satisfy the researchers by giving 'favourable reviews'.

The former basically argues that the entrepreneur may have a more general opinion with regards to participation in the program. Based on this general opinion of the program, the entrepreneur may be inclined to misrepresent the actual economic returns/effect the company actually experienced from the participation.

Out of the participating firms, many were very newly established (some were even at a concept level). Many of the entrepreneurs had little business experience and no education in business. Being able to assess and isolate single events and their economic effect on the company may be challenging for anyone. Doing so in the context of a questionnaire without allocating too much time and effort would be near impossible for most business owners. If one adds the fact that some of the participations occurred 10 years ago and may be difficult to recollect, the measurement of economic effects will not be easy for many of the companies. This may be why the descriptive results showed that so many "neither agree nor disagree". A final note is that the most recent participants may not have experienced the economic effects yet. Getting back to the discussion of the level of analysis, it would be very difficult to research this topic in a different way. Revisiting the literary review, it was pointed out that McMullan et al. (1986) attempted to measure at the same level of analysis as us, but with

more complicated measurements and more business understanding required by the respondent. This proved to be problematic as the estimates became very complicated for the respondents. Solomon and Weaver (1983) attempted to measure the items against the national average, using accounting numbers from the firms. This could work to some extent, but this is provided one could get reliable data from both parties and it would still leave the paper with an issue of how to analyse the independent variables at the same level of analysis. Solomon and Weaver (1983) did not run a causality study, and this method may to some extent be suited for a descriptive study (although it has its limitations here as well).

Finally, it could be suggested that only 14 of the 44 observations have actually indicated that they implemented the recommendations to some extent, while 30 did not. As such, one can argue that most observations are irrelevant for the analysis of economic effects, and 14 respondents is an insufficient sample size for running a separate analysis. And hence, again, we cannot study economic outcomes of participation based on the data collected.

To sum up this section, it should be emphasised that the abovementioned points are mere suggestions. In order to determine causal relationships to economic effects further research is necessary. One interesting study here would be a comparative study between the hard numbers presented by Solomon and Weaver (1983) and a study at the entrepreneur level of analysis (either similar to McMullan et al., 1986 or the questions presented in this paper). This may uncover how reliable the assessments of the entrepreneur are.

5.3 Hypotheses and Causality

This section will examine the hypotheses proposed in chapter 2 in the light of the findings in this paper. When hypothesis are rejected in this paper, it is important to keep in mind the sample size. The paper does regardless of this wish to reject the hypothesis on a statistical basis. Based on this, the following assessment has been made:

Dependent Variable	Independent variable	Hypothesis Number	Significance	Beta
Satisfaction	Commitment of Entrepreneur – Ideological	2a	0.004	0.353
	Perceived Professionalism of Students	1a	0.006	0.344
	Practicality of Recommendations	3a	0,048	0.229
Recruitment – HR	*No significant independent variables*			
Intangible Effects	Commitment Ideological	2c	0.010	0.452
	Practicality of Recommendations	3c	0.074	0.295
Implementation	Satisfaction	4	0.004	0.405
	Intangible Effects	6	0.015	0.351
Economic Effects	*No significant independent variables*			

Table 5.3 Hypotheses Summary Table

As one can see from the table above, there are three dependent variables where null-hypotheses could be rejected:

- Intangible Effects
- Satisfaction
- Implementation

One null-hypothesis (3c) can be rejected at the 0.1-level; one (3a) can be rejected at a 0.05-level. The remaining hypotheses listed above (2a, 1a, 2c, 4 and 6) can be rejected at a 0.02-level.

An interesting observation from these results is that intangible effects and satisfaction (which have received the most attention in recent literature) appear to be the only two variables mentioned in the literature with significant results.

As a result of the analyses and discussions above, the following figure can be presented to suggest causal relationships:

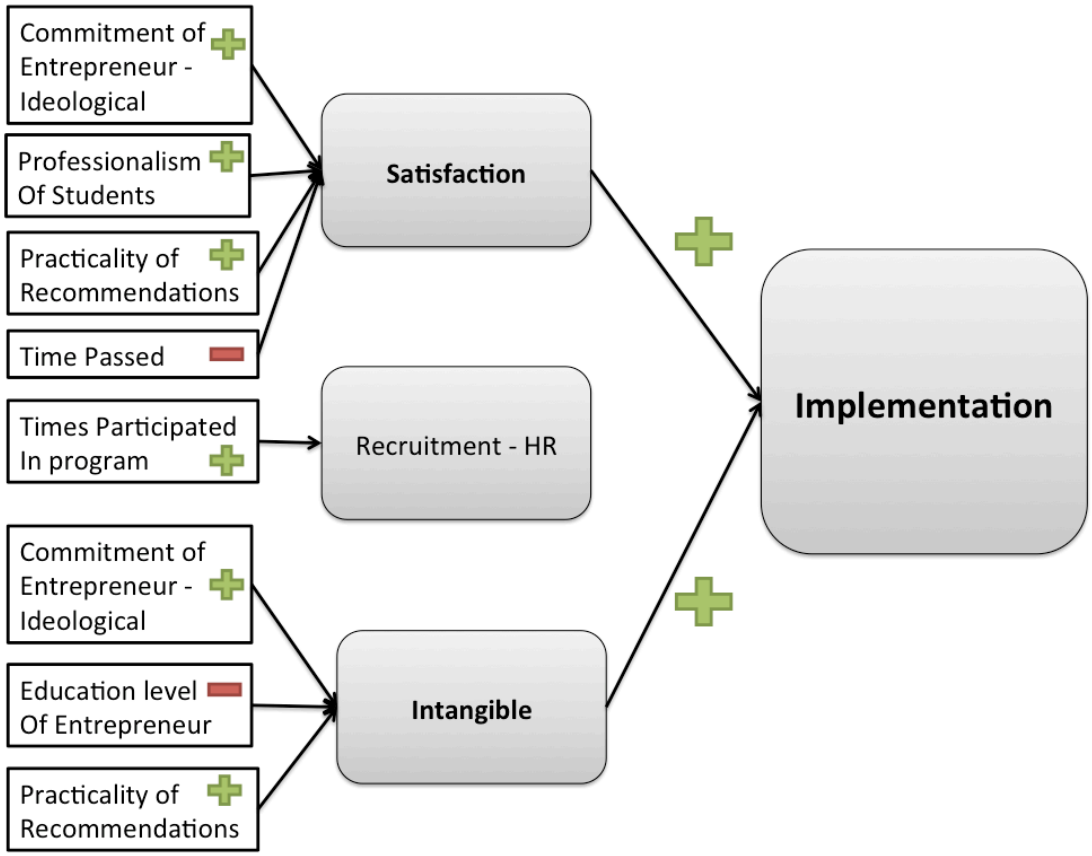


Figure 5.3 Causal Relationships

Chapter 6 Concluding Remarks

The objective of the study presented in this paper was to elaborate on the effects experienced by the participating firms in student consultancy programs and suggest what these effects depend upon. This was done in the context of two student consultancy programs that have been running at the University of Agder for the past 10 years. Looking at only two consulting programs from one university has clearly provided some limitations for generalisations, but this paper would argue that the study still provide a useful insight, both for the university that run the program, for universities running similar programs and for other stakeholders such as innovation hubs, potential participants and government institutions funding such programs.

This paper has provided a useful insight into the field of student consulting programs. It has aimed to provide an insight into the least researched area of effects from the program; the effects experienced by participating firms. In doing so, it has shown that the participating firms see a clear effect of participating and that these effects are conditioned on a set of variables that determine the degree to which the participating firms experience these effects. Finally, it has presented research that suggests that implementation of the recommendations made by the students is contingent on the intangible effects and the satisfaction the participating firm experiences from participating.

6.1 Contributions of this study

This study has added a large descriptive base for understanding the effects that student consultancy programs can have on the firms/entrepreneurs who participate. It has done so through extensive descriptive and causal analyses.

It has shown that the majority of the firms that participate are satisfied with the experience and that they are more likely to be satisfied if they have a committed positive attitude to academic consultancy programs, the students are professional and the recommendations are practical.

The research has also found that half of the firms that participated experienced intangible effects from participating and that these effects are positively influenced by how committed

the entrepreneur is and how practical the education is. The paper also found that the education level of the entrepreneur influences intangible effects negatively. It was suggested that this may be due to the indoctrination that can come from specialising in a field inhibiting the learning and reframing of narratives that the entrepreneur would have otherwise experienced.

The study also found that strategic effects should be replaced by recruitment, as there was too much overlap between strategic effects and the other variables. When it comes to recruitment, the findings points to the fact that only a few of the firms chose to recruit students who participated in the program.

The study also found that measuring economic effects at the level of analysis used in this study was very difficult. The paper suggests that this may be due to the fact that the respondents answer what they believe the researchers want to hear, the entrepreneur has difficulty isolating economic effects that are due to the program from other economic effects and finally that the entrepreneurs general opinion of participation may influence his response.

Finally, the study has found that approximately one third of the participating firms chose to implement the recommendations fully. It found that the likelihood of the firms implementing the recommendations is positively dependent upon how satisfied they are and what intangible effects they experience from participation.

The effects found are very relevant in the sense that they provide an excellent foundation for further adaptation of the academic consultancy programs and provide clear implications for both practice and further research. Both sets of implications will be presented in the upcoming sections.

The findings also provide excellent foundation for further research.

6.2 Limitations of Study

This paper would like to point to four issues that can be seen as limitations of the study. The first issue pertains to the issues of reliability. This issue may suggest the study does not

capture all effects, or identify effects that are not there because of a non-representative sample.

The second issue pertains to generalisation. Since the study is limited to one university, one country and one type of students, it makes the generalizability of the research quite difficult, and therefore suffers possible context constraints. What however makes the study stronger is that the sample covers a large share of the population that participated in the two academic programs. Generalisation within this population may hence be possible.

The third issue pertains to the fact that single item measurements have been used and in some cases, single item measurements are not the best way to measure complex phenomena. As mentioned in chapter 3 and 4, the factor analysis was only performed for four dependent variables (satisfaction, economic effects, intangible effects and strategic effects). For the independent variables and implementation, a single item covering the entire variable was used.

The final issue is that some variables that could be influential were not included in the study. In order to get a full picture of causal effects, relevant variables need to be included. Due to the limited capacity of one study, some variables may not have been included that could have an effect on the dependent variables. In the case of this paper, the variables included were selected based on previous research and findings. It would still be interesting to include some additional variables. The variables could for instance be:

- Industry affiliation of ventures
- Student commitment levels
- Ventures resource constraints/availability (to implement recommendation)
- Group size and compositions.

Despite the limitations above, this paper would argue that the findings presented provide a valuable insight into a field where this insight is very necessary.

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6.3 Further research

It is argued above that the research presented and discussed in this paper can provide a solid foundation for further research in the field. This paper will suggest three directions for further research.

Firstly, replicating the study in other universities and national contexts to examine the extent to which findings hold in these will provide an excellent foundation for generalisation of findings within this field.

Secondly, an interesting aspect for further studies would be to replicate the study with additional variables that have not been included in the current study. Some examples of additional variables could be potential effects of firms' industry/sector affiliation, student group compositions and sizes or student dedication levels.

A final suggestion for further research would be replicating the study in a context that will lend itself to collecting data from a larger number of observations. This would provide a way to examine the benefits of multiple items measurements in capturing effects, as well as the possibility of including more explanatory variables in the analysis.

6.4 Implications for practice

One of the implications for practice discussed pertains to the conflict between delivering practical and usable recommendations to the entrepreneurs and ensuring the academic quality of the program with special regards to:

- Academic relevance
- Fair assessment (Grading)
- Clarity (clear information about the content of the program)

It has been argued that the most pertinent issue here is careful selection of firms to participate in the program.

Building on the implication above, selecting firms may be very important to ensure that the prerequisite for positive effects from participation are present. When selecting which firms to participate, it could be useful to consider certain elements:

- Entrepreneurs with lower education perceive more intangible effects from participating. They may therefore be more attractive for such programs.
- Making sure that the needs of the entrepreneur is in line with the purpose of the project.
- Making sure the entrepreneur has a good attitude towards programs of this type (commitment ideological).

This will most likely provide the program with the entrepreneurs who are not only more motivated, but also who will benefit the most from the program.

Another implication is that the study is an arena for recruitment and hence should be treated as such. Many firms who participate are willing to hire students. Both professors and the program structure should accommodate this by emphasising and encouraging recruitment in a way that may further increase the willingness of the entrepreneurs to hire the students. This could make the relationships forged in the program even more fruitful. It has also been suggested in the papers that steps taken to ensure that the practicality of recommendations will increase the positive effects experienced by the participating firms. This paper has suggested that flexibility to match the needs combined with a step-by-step 'to do' list will help ensure this. It has also suggested that challenges here lie in ensuring fair grading and academic relevance in the program while still conforming to the needs of the participating firms. It has also pointed to the issue of leveraging predictability for the students with flexibility for the participating firms.

Finally, the research suggests that the intangible effects and satisfaction have a positive causal relationship to whether the participating firm chooses to implement the recommendations made by the students. There are several stakeholders that this may be important to.

Firstly, the people running the programs will want to gain credibility trough providing useful recommendations that the firms can use. Implementation is an important confirmation that the output of the program is usable. Knowing what influences this is therefore a useful way of improving the programs.

Secondly, the firms will want to know that they are left with something they can use and hence knowing what influences the likelihood of ending up with recommendations they feel confident implementing is important.

Finally, other stakeholders that are important are business incubators, financing institutions and government agencies that instigate this for the firms and are interested in the outcome for the firms that participate. They wish to provide the firms with direct contributions that they can use. The best way of ensuring this is to know which factors influence the degree to which the recommendations are implemented.

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Appendix 1 – Questionnaire in English

Questionnaire for participants of INT LAB and/or Gründerlab – 2005-2015. The purpose of the project is to map how the participants have experienced and possibly benefited from INT LAB or Gründerlab. The identity of the participating respondents will not be made public and the information will be secured and used only in the context of the master thesis in strategy and entrepreneurship. The paper is being written by Saif Khan and Erik Egeland. Supervisor for the project is Dr. Rotem Shneor.

If you have any questions, please not hesitate to contact us:

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What was the name of your company/concept when you attended INT LAB/Gründerlab?

_____
_____

Describe the type of product/service/concept you wanted the student group develop a plan for? (2 lines maximum)

_____
_____

What was the status of the organisation/concept when you participated in INT LAB/Gründerlab?

(1) ❑ Idea Only
(2) ❑ Registered for-profit enkeltmannsforetak
(3) ❑ Registered for-profit aksjeselskap
(4) ❑ Non-profit
(5) ❑ Other

The entrepreneur behind the concept is

(1) ❑ Male
(2) ❑ Female
(3) ❑ Multiple participants

The entrepreneurial team behind the concept is mostly comprised of

(1) ❑ Males
(2) ❑ Females
(3) ❑ Equal mix males and females

How many times/years have you participated in this (or a similar program)?

_____

Please indicate to what extent you agree or disagree with the following statements with regards

to you participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Disagree
The students executed the task in a professional way	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students had a service oriented attitude	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students displayed theoretical knowledge applicable to the assignment	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students were able to reframe tasks based on professional knowledge	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students effectively performed the tasks they were given	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students displayed confidence in solving the task	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Please indicate to what extent you agree or disagree with the following statements with regards to you participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
There was good match between my goals and the goals of the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I was fully involved in the program and the students' work	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I participated actively in the program and the students' work	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I made sure to allocate an appropriate amount of time for the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
I was pressured to participate in the program by Innovation Norway	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

and/or the UiA							
It would have been difficult for me to refuse the invitation of Innovation Norway and the UiA to participate in this program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
There would be costs by not participating	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
I think it is good for small firms to seek advice and support from university business students and their supervisors	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I think it is beneficial to involve business students in real-life challenges of small firms	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I think that students' project work for small firms is becoming more common these days	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Regardless of whether you have followed the students' recommendations or not, please indicate to what extent you agree or disagree about the following statements:

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
The students provided practical recommendations for our company to follow (if we wanted to)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students provided us with a list of concrete steps we could take (if we wanted to)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students provided us with practical information that was useful to our work	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The students provided us with advice we could implement in our work (if we wanted to)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

The students provided us with plans that we could proceed with	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

How many students were assigned to your company/project in INT LAB/Gründerlab

(1) ❑ Up to 3
(2) ❑ More than 3

My team was one of the winning teams in the final presentation

(1) ❑ Yes
(2) ❑ No

Which of the following best describes your level of education?

(1) ❑ Didn't complete high school
(2) ❑ High school education
(3) ❑ Bachelor's Level Education
(4) ❑ Master's Level Education
(5) ❑ PhD

Years of business experience – indicate number of years (i.e. 1,2,3,5,10, etc.):

How many years have you been in full time employment? _____

How many years have you been employed in a managerial position? _____

How many years of experience do you have of being an entrepreneur? _____

How many new ventures have you started (including the venture that participated in the program) indicate number of ventures (i.e. 1,2,3,5,10, etc.):

Total so far _____

Total before joining the program _____

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
We have fully implemented the recommendations of the students projects	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
To a large extent, we have followed most of the recommendations made in the student´s	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

project							
We have made effort in implementing as many of the students´ recommendations as we could.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
We have done our best to implement as many of the students´ recommendations as possible.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
Given the choice, I would use the program again	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I would recommend the program to others	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The project was a good use of my time	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I think I did the right thing when I joined this program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The program was something we needed at the time	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
Participating the in programme has contributed in quicker development of my company/concept	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The information from the research the students performed was used by our company	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
I identified underlying challenges with my company that I was not aware of before entering the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Participating in the program helped us gain useful contacts and network access	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

I gained access to useful resources from participating in the program	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Following our participation we have involved some of the students in our company activities after the program was finished	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Following our participation we have decided to hire one of the students to our company	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Please indicate to what extent you agree or disagree with the following statements with regards to your participation in INT LAB/Gründerlab.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Agree	Strongly Agree
My analytical skills were improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My abilities for critical thinking were increased	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My decision making skills have improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My abilities to analyse markets and segments have improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My understanding of strategic options for my firms have improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My understanding of business planning processes has improved	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
My perception of elements in my business that I used to take for granted was changed.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
The program was a valuable learning experience	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Please indicate on the scale how you perceive that the following elements have changed (or not changed) as a result of participating in the program and/or implementing the recommendations that emerged from it.

	Large Decrease	Decrease	Sligth Decrease	Neither Decrease nor Increase	Slight Increase	Increase	Large Increase
Number of employees	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Profit levels	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Sales volumes	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Cost levels	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Market share	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Number of customers	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Number of business partners	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Answer the following questions regarding the current status of your company that participated in INT LAB/Gründerlab.

	Yes	No
Does the company still exist?	(1) ❑	(2) ❑
Was the company sold in the period after your participation?	(1) ❑	(2) ❑
Did the company merge with a different company in the period after your participation?	(1) ❑	(2) ❑
Was the company closed down in the period after your participation?	(1) ❑	(2) ❑
Did the company shift focus (i.e. different products and services) in the period after your participation?	(1) ❑	(2) ❑

Thank you very much for participating taking the time to answer the questionnaire!

Best Regards
Erik Egeland
and
Saif Khan

Appendix 2 – Questionnaire in Norwegian

Spørreundersøkelse blant deltakere i INT LAB og Gründerlab – 2005-2015
Formålet med oppgaven er å kartlegge hvordan deltakerne har opplevd og hatt eventuell nytte av INT LAB og eller Gründerlab. Identiteten til respondentene som deltar i spørreundersøkelsen vil ikke bli offentliggjort, og informasjonen vil bli sikret og kun brukt i sammenheng med masteroppgaven i strategi og entreprenørskaps. Oppgaven blir skrevet av Saif Khan og Erik Egeland. Veileder for oppgaven er Dr. Rotem Shneor.
Hvis du har noen spørsmål kan vi kontaktes på:

Erik Egeland 47 36 91 91 erikege@gmail.com
Saif Khan 41 20 82 89 saifkhan@live.no

Hva var navnet på firmaet/konseptet ditt når du deltok i INT LAB/Gründerlab?

_____
_____

Beskriv typen produkt/tjeneste/konsept som du ønsket at studentgruppen skulle utvikle en plan for (bruk maksimalt 2 linjer)

_____
_____

Hva var status på organisasjonen/konseptet da du deltok i INT LAB/Gründerlab?

(1) ❑ Kun i idéfase
(2) ❑ Registrert kommersielt enkeltmannsforetak
(3) ❑ Registrert kommersielt aksjeselskap
(4) ❑ Stiftelse
(5) ❑ Annet

Gründeren bak virksomheten eller konseptet er

(1) ❑ Mann
(2) ❑ Kvinne
(3) ❑ Flere deltakere

Teamet bak konseptet består i hovedsak av

(1) ❑ Menn
(2) ❑ Kvinner
(3) ❑ En jevn blanding av menn og kvinner

Hvor mange ganger/år har du deltatt i dette (eller liknende) INT LAB/Gründerlab?

_____

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Studentene utførte oppgaven på en profesjonell måte	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene hadde en serviceorientert holdning	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene kunne vise til teoretisk kunnskap som var relevant for oppgaven	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene klarte å belyse nye synspunkt rundt oppgaven basert på profesjonell kunnskap	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene gjennomførte oppgavene de var gitt på en effektiv måte	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene fremviste selvsikkerhet i oppgaveløsingen	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Det var en god match mellom mine mål og studentprosjektets mål	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg var fullt ut involvert i prosjektet og studentenes arbeid	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg deltok aktivt i prosjektet og studentenes arbeid	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg satt av og dedikerte tilstrekkelig tid til prosjektet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Jeg ble presset til å delta i prosjektet av Innovasjon Norge og/eller UiA	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Det ville vært vanskelig for meg å avslå invitasjonen fra Innovasjon Norge og UiA om å delta i programmet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Det ville påløpe kostnader ved å ikke delta	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Jeg tror det er bra for små bedrifter å søke råd og støtte fra økonomistudenter og deres veiledere	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg tror det er gunstig å involvere økonomistudenter i de faktiske utfordringene til små bedrifter	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg tror at studentprosjekter i samarbeid med små bedrifter er i ferd med å bli mer vanlig	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Uavhengig av om du fulgte rådene fra studentene, vennligst indiker i hvilken grad du er enig eller uenig påstandene under

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Studentene utarbeidet og fremstilte verdifulle anbefalinger for vår bedrift som vi kunne følge (om vi ønsket)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene utarbeidet og fremstilte en liste med konkrete skritt vil kunne ta (om vi ønsket)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene utarbeidet og fremstilte praktisk informasjon som var nyttig for vårt arbeid	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene utarbeidet og fremstilte råd som vi kunne anvende i vårt arbeid (om vi ønsket)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentene utarbeidet planer som vi kunne følge opp og jobbe videre med	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Hvor mange studenter arbeidet med ditt firma/prosjekt i INT LAB/Gründerlab?

(1) ❑ Opp til 3

(2) ❑ Mer enn 3

Mitt studentgruppe var en av vinnerne i sluttpresentasjonen

(1) ❑ Ja
(2) ❑ Nei

Hvilket av de følgende beskriver best ditt utdanningsnivå?

(1) ❑ Har ikke fullført videregående skole
(2) ❑ Utdanning fra videregående skole
(3) ❑ Utdannelse på bachelornivå
(4) ❑ Utdannelse på masternivå
(5) ❑ PhD (Doktorgrad)

Arbeidserfaring – indiker antall år (1,2,3,5,10, etc.)

Hvor mange års erfaring har du som fulltidsansatt? _____

Hvor mange år har du arbeidet i en stilling med lederansvar? _____

Hvor mange års erfaring har du som gründer? _____

Hvor mange nye foretak har du startet (inkludert foretaket som deltok i INT LAB/Gründerlab)? Indiker med tall (1,2,3,5,10 etc.)

Totalt så langt _____

Totalt før deltakelse i prosjektet _____

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Vi har fullt ut implementert anbefalingene fra studentenes prosjekt	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Vi har i stor grad fulgt mesteparten av anbefalingen fra studentenes prosjekt	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Vi har gjort en innsats for å implementere så mange av studentenes anbefalinger som vi kunne	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Vi har gjort vårt beste for å implementere så mange av studentenes anbefalinger som mulig	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Hadde jeg fått muligheten ville jeg deltatt i prosjektet igjen	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg kan anbefale deltakelse i studentprosjektet til andre	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Studentprosjektet var fornuftig bruk av min tid	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg tror jeg gjorde et godt valg da jeg valgte å delta i prosjektet.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Deltakelse i prosjektet var noe vi trengte på den tiden vi deltok	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Deltakelse i programmet bidro til at firma/konseptet fikk en raskere utvikling	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Informasjonen fra undersøkelsene gjennomført av studentene ble anvendt av vårt foretak	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg identifiserte underliggende utfordringer for min bedrift som jeg ikke var klar over eksisterte før jeg deltok i prosjektet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Deltakelse i prosjektet hjalp oss å anskaffe nyttige kontakter og tilgang til nyttige nettverk	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Jeg fikk tilgang til nyttige ressurser gjennom å delta i prosjektet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Som følger av vår deltakelse i prosjektet har vi involvert noen av studentene i virksomheten sine aktiviteter etter at prosjektet endte	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Som følger av vår deltakelse i prosjektet bestemte vi oss for å ansette en av studentene i vårt selskap	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Vennligst indiker i hvilken grad du er enig eller uenig følgende påstander om din deltakelse i INT LAB/Gründerlab

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig

	Sterkt uenig	Uenig	Delvis uenig	Hverken enig eller uenig	Delvis enig	Enig	Sterkt enig
Mine analytiske evner ble forbedret	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Mine evner for kritisk tenking ble forbedret.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Mine evner for beslutningstaking ble forbedret.	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Mine evner til å analysere markeder og segmenter ble forbedret	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Min forståelse for strategiske valg for mitt firma ble forbedret	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Min forståelse av strategiske planleggingsprosesser ble forbedret	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Min oppfatning av elementer i min bedrift som jeg tidligere tok for gitt at stemte ble endret	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Programmet var en verdifull læringserfaring	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Vennligst indiker på en skala hvordan du opplever at følgende elementer har endret (eller ikke endret) seg som et resultat av deltakelse i prosjektet og/eller implementeringen av anbefalinger som kom av deltakelsen i INT LAB/Gründerlab

	Minsket betydelig	Minsket	Minsket litt	Hverken minsket eller økt	Økt litt	Økt	Økt betydelig
Antall ansatte	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Profittnivåer	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Salgsvolumer	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Kostnadsnivåer	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Markedsandel	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Antall kunder	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑
Antall forretningspartnere	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑

Nåværende status på bedriften

	Ja	Nei
Eksisterer den deltakende bedriften fortsatt?	(1) ❑	(2) ❑
Ble bedriften solgt i perioden etter du deltok i prosjektet?	(1) ❑	(2) ❑
Har bedriften slått seg sammen med et annet selskap i perioden etter du deltok i prosjektet?	(1) ❑	(2) ❑
Var bedriften midlertidig lagt ned på noe tidspunkt etter du deltok i prosjektet?	(1) ❑	(2) ❑
Endret bedriften fokus (f.eks andre produkter eller tjenester) i perioden etter du deltok i prosjektet?	(1) ❑	(2) ❑

Tusen takk for at du tok tid til å besvare spørreundersøkelsen!

Med vennlig hilsen
Erik Egeland
og
Saif Khan

Appendix 3 – Participating firms

	Grunder Lab 2005		**Int Lab 2005**
1	Setesdal mat	1	Digimaker
2	Regnskapsfabrikken	2	Origo Engineering
3	Qstone	3	Flooring Norge
4	Hocus Pocus Leseøya	4	WPC
5	Sanum	5	Water Mist Engineering
6	MedOnTime	6	Norsk Interaktive
7	Gaffa Squad Production	7	Control IT systems
8	Feedback Aquaculture		
			Int Lab 2006
	Grunder Lab 2006		
		1	Applica Bizware
1	Aktiv Assistanse	2	V-Tech
2	Åtte	3	Heimdals Plastprodukter
3	Absolutt Film	4	Quickflange
4	Community Reborn	5	Noroff
5	IBY.no		
6	Reisebokhandelen (student project)		**Int Lab 2007**
	Grunder Lab 2007	1	Agile
		2	Arphiola
1	Pittz	3	Gobex
2	Fotogram	4	Grimstad Planteskole
3	Tilpass	5	Icemaker
4	Porto Franco	6	Nøgne Ø
5	Elton & Jacobsen		
			Int Lab 2009
	Grunder Lab 2008		
		1	Axnes
1	Newmansland	2	Integrasco
2	Tor Einar Sandvikmoen	3	Nettlapen
3	Karte Johansen	4	Seamless
4	Ingrid Kristine Hasund	5	Spitzbergen
5	?	6	Storm Offshore
		7	Viking Developemnt Group (Desalination)
	Grunder Lab 2009		
			Int Lab 2010
1	Vitentimen		
2	ABC Hygiene	1	Blast Manager
3	BMO Medical	2	Hasla
4	Hest og Aktivitetsgård Lillesand	3	Impetus
5	Larsen Biathlon	4	Man in Van
		5	Maritime & Energy

	Grunder Lab 2010	6	MD Group
		7	Penelope Films
1	Bookjacket	8	Quickflange
2	Bravur		
3	mSale		**Int Lab 2011**
4	Mossi Suss		
5	Voca	1	L&J
6	Farsund Safety Solutions	2	Polewall
7	Lift Your Body	3	Scopus
		4	Viking Development Group (CraftEngine)
	Grunder Lab 2011	5	Virtex
1	Ane Tollerun Fosse (illustrator)		**Int Lab 2012**
2	De Jentene Der		
3	Honningbarna/Louis Holbrook	1	Subwing (Defense)
4	Jan Rune Blom (animation)	2	Play & Track
5	Johansen Forskalings Teknikk	3	Skimmer Technology
6	Kindergraph	4	Stelleland Bok og Media (Reliquiz)
7	L&J	5	Engineering Systems (Once Software)
8	Odd Arne Nordbø (experiences for disabled)		
9	Subwing		**Int Lab 2013**
10	Veronica Vallenes (fashion design)		
		1	Markedslabben (WindFarm Optimization)
	Grunder Lab 2012	2	RedRock 1 (e-ticketing systems)
		3	RedRock 2 (cranes for offshore)
1	Applicus	4	Sjapper
2	C-Sol	5	BPM Productions
3	Epherma		
4	KLX Enhanced Sound		**Int Lab 2014**
5	Stelleland Bok og Media (Kunnskapspillet)		
6	Skrederriet	1	Funky Dorris
7	Small Classic	2	Sports Capital
8	Støa Leketøyfabrikk	3	Diagraphit
9	Trigg Management	4	Musai
10	Trilobite		
11	Woodward Scandinavia		
		52	**TOTAL 2005-2014**
	Grunder Lab 2013		
1	Fyrlyd		
2	Handverksfabrikken		
3	Hugsar		
4	Portalen (KirkensBymisjon)		
5	PureFood Lifestyle		
6	SkillTree		
7	Smart Stables		

8	Studentkompetanse Agder (student project)		
9	TiggFri By (Kristiansand Kommune)		
10	Østsia (student project)		
11	Neuroterapi (student project)		
12	Sørlandets Fjellsaging (student project)		
	Grunder Lab 2014		
1	Funky Dorris		
2	LABO (film studio tech)		
3	Moen & Haugeto		
4	Telaris		
5	Ostverkstedet		
6	Gbuddy (student project)		
75	**TOTAL 2005-2014**		
	68 Innovation Norway projects		
	6 Student projects		
	1 KirkensBymisjon		
	1 Kristiansand Kommune		

Appendix 4 Correlation Matrices

1 - Satisfaction

Correlations

		Satisfaction	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	7a Professionality	8d ComittmentAffective	9a ComittmentNormative	10a ComittmentIdeological	11a Practicality
Pearson Correlation	Satisfaction	1.000	.005	-.204	-.028	.013	.725	.357	-.397	.677	.603
	6 Timesparticipated	.005	1.000	-.056	.238	.124	.117	-.006	.187	.092	.212
	Timepassed	-.204	-.056	1.000	-.139	.441	-.078	-.038	-.017	-.016	-.056
	14 Educationlvl	-.028	.238	-.139	1.000	.109	-.008	-.056	-.067	.056	.115
	16a CompaniesEstablished	.013	.124	.441	.109	1.000	.023	-.048	.022	.003	.107
	7a Professionality	.725	.117	-.078	-.008	.023	1.000	.323	-.286	.501	.581
	8d ComittmentAffective	.357	-.006	-.038	-.056	-.048	.323	1.000	-.069	.194	.117
	9a ComittmentNormative	-.397	.187	-.017	-.067	.022	-.286	-.069	1.000	-.510	-.149
	10a ComittmentIdeological	.677	.092	-.016	.056	.003	.501	.194	-.510	1.000	.445
	11a Practicality	.603	.212	-.056	.115	.107	.581	.117	-.149	.445	1.000

2 - Strategic Effects

Correlations

		StrategicHR	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	7a Professionality	8d ComittmentAffective	9a ComittmentNormative	10a ComittmentIdeological	11a Practicality
Pearson Correlation	StrategicHR	1.000	.499	-.059	.267	.283	.245	-.016	.115	.074	.363
	6 Timesparticipated	.499	1.000	-.056	.238	.124	.117	-.006	.187	.092	.212
	Timepassed	-.059	-.056	1.000	-.139	.441	-.078	-.038	-.017	-.016	-.056
	14 Educationlvl	.267	.238	-.139	1.000	.109	-.008	-.056	-.067	.056	.115
	16a CompaniesEstablished	.283	.124	.441	.109	1.000	.023	-.048	.022	.003	.107
	7a Professionality	.245	.117	-.078	-.008	.023	1.000	.323	-.286	.501	.581
	8d ComittmentAffective	-.016	-.006	-.038	-.056	-.048	.323	1.000	-.069	.194	.117
	9a ComittmentNormative	.115	.187	-.017	-.067	.022	-.286	-.069	1.000	-.510	-.149
	10a ComittmentIdeological	.074	.092	-.016	.056	.003	.501	.194	-.510	1.000	.445
	11a Practicality	.363	.212	-.056	.115	.107	.581	.117	-.149	.445	1.000

3 - Intangible Effects

Correlations

		Intangible	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	7a Professionality	8d ComittmentAffective	9a ComittmentNormative	10a ComittmentIdeological	11a Practicality
Pearson Correlation	Intangible	1.000	.140	.067	-.308	.019	.332	.303	-.008	.460	.417
	6 Timesparticipated	.140	1.000	-.056	.238	.124	.117	-.006	.187	.092	.212
	Timepassed	.067	-.056	1.000	-.139	.441	-.078	-.038	-.017	-.016	-.056
	14 Educationlvl	-.308	.238	-.139	1.000	.109	-.008	-.056	-.067	.056	.115
	16a CompaniesEstablished	.019	.124	.441	.109	1.000	.023	-.048	.022	.003	.107
	7a Professionality	.332	.117	-.078	-.008	.023	1.000	.323	-.286	.501	.581
	8d ComittmentAffective	.303	-.006	-.038	-.056	-.048	.323	1.000	-.069	.194	.117
	9a ComittmentNormative	-.008	.187	-.017	-.067	.022	-.286	-.069	1.000	-.510	-.149
	10a ComittmentIdeological	.460	.092	-.016	.056	.003	.501	.194	-.510	1.000	.445
	11a Practicality	.417	.212	-.056	.115	.107	.581	.117	-.149	.445	1.000

4 -Implementation

Correlations

		17a Implementation	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	Satisfaction	StrategicHR	Intangible
Pearson Correlation	17a Implementation	1.000	.217	-.214	-.030	.057	.603	.345	.533
	6 Timesparticipated	.217	1.000	-.056	.238	.124	.005	.499	.140
	Timepassed	-.214	-.056	1.000	-.139	.441	-.204	-.059	.067
	14 Educationlvl	-.030	.238	-.139	1.000	.109	-.028	.267	-.308
	16a CompaniesEstablished	.057	.124	.441	.109	1.000	.013	.283	.019
	Satisfaction	.603	.005	-.204	-.028	.013	1.000	.199	.389
	StrategicHR	.345	.499	-.059	.267	.283	.199	1.000	.198
	Intangible	.533	.140	.067	-.308	.019	.389	.198	1.000

5 - Economic 1

Correlations

		Economic	6 Timesparticipated	Timepassed	14 Educationlvl	16a CompaniesEstablished	Satisfaction	StrategicHR	Intangible
Pearson Correlation	Economic	1.000	-.165	.012	.013	.051	.076	.130	-.140
	6 Timesparticipated	-.165	1.000	-.056	.238	.124	.005	.499	.140
	Timepassed	.012	-.056	1.000	-.139	.441	-.204	-.059	.067
	14 Educationlvl	.013	.238	-.139	1.000	.109	-.028	.267	-.308
	16a CompaniesEstablished	.051	.124	.441	.109	1.000	.013	.283	.019
	Satisfaction	.076	.005	-.204	-.028	.013	1.000	.199	.389
	StrategicHR	.130	.499	-.059	.267	.283	.199	1.000	.198
	Intangible	-.140	.140	.067	-.308	.019	.389	.198	1.000

6 – Economic 2

Correlations

		Economic	6 Timesparticipated	14 Educationlvl	16a CompaniesEstablished	Satisfaction	StrategicHR	Intangible	Timepassed	4 Male/Female	15a Work Experience
Pearson Correlation	Economic	1.000	-.165	.013	.051	.076	.130	-.140	.012	-.184	.068
	6 Timesparticipated	-.165	1.000	.238	.124	.005	.499	.140	-.056	-.056	.029
	14 Educationlvl	.013	.238	1.000	.109	-.028	.267	-.308	-.139	-.220	-.105
	16a CompaniesEstablished	.051	.124	.109	1.000	.013	.283	.019	.441	-.303	.180
	Satisfaction	.076	.005	-.028	.013	1.000	.199	.389	-.204	-.075	.019
	StrategicHR	.130	.499	.267	.283	.199	1.000	.198	-.059	-.115	-.140
	Intangible	-.140	.140	-.308	.019	.389	.198	1.000	.067	.076	-.162
	Timepassed	.012	-.056	-.139	.441	-.204	-.059	.067	1.000	.010	.213
	4 Male/Female	-.184	-.056	-.220	-.303	-.075	-.115	.076	.010	1.000	-.097
	15a Work Experience	.068	.029	-.105	.180	.019	-.140	-.162	.213	-.097	1.000

Appendix 5 Statistical Power

The following appendix presents the calculations behind statistical power. The following (as well as a calculator/generator) for calculating the effect is based on a web page: Soper (2015). The calculator is based on writing by Cohen (1988) and Cohen et. al. (2003).

The following formulas are involved in the calculation of post-hoc statistical power values for multiple regression studies:

Beta function:

$$\mathrm{B}(x,y) = \int_0^1 t^{x-1}(1-t)^{y-1}\,dt$$

Cohen's f^2 effect size for an F-test:

$$f^2 = \frac{R^2}{1-R^2}$$

where R^2 is the squared multiple correlation.

Error function:

$$\operatorname{erf}(x) = \frac{2}{\sqrt{\pi}} \int_0^x e^{-t^2}\,dt.$$

F-distribution cumulative distribution function (CDF):

$$F(x; d_1, d_2) = I_{\frac{d_1 x}{d_1 x + d_2}}(d_1/2, d_2/2),$$

where d_1 and d_2 are the degrees of freedom, and I is the regularized lower incomplete beta function.

Lower incomplete beta function:

$$\mathrm{B}(x;\,a,b) = \int_0^x t^{a-1}\,(1-t)^{b-1}\,dt.$$

Noncentral F-distribution cumulative distribution function (CDF):

$$F(x|d_1, d_2, \lambda) = \sum_{j=0}^{\infty} \left(\frac{\left(\frac{1}{2}\lambda\right)^j}{j!} e^{-\frac{\lambda}{2}} \right) I\left(\frac{d_1 F}{d_2 + d_1 F} \middle| \frac{d_1}{2} + j \right.$$

where d_1 and d_2 are the numerator and denominator degrees of freedom, *?* is the noncentrality parameter, *F* is the Fisher F-value, and *I* is the regularized lower incomplete beta function.

Noncentral F-distribution noncentrality parameter:

$$\lambda = f^2 n$$

where f^2 is the effect size and *n* is the sample size.

Normal distribution cumulative distribution function (CDF):

$$F(x;\, \mu, \sigma^2) = \frac{1}{2}\left[1 + \operatorname{erf}\left(\frac{x-\mu}{\sigma\sqrt{2}}\right)\right],$$

where μ is the mean, σ is the standard deviation, and *erf* is the error function.

Regularized lower incomplete beta function:

$$I_x(a, b) = \frac{\mathrm{B}(x;\, a, b)}{\mathrm{B}(a, b)}.$$

where the numerator is the lower incomplete beta function, and the denominator is the beta function.