THE IMPACT OF NETWORKS ON EFFECTUATION OVER CAUSATION PROCESSES

Master Thesis Business Administration

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Acknowledgements

This master thesis is part of my graduation at the University of Twente. Writing this thesis totally enriched my existing knowledge and competencies. I am thankful for having the experience to learn about writing my own research project. However, without some important persons this project would not exist and therefore I take this opportunity to thank these persons.

First of all, I would like to thank my first supervisor Msc Martin Stienstra for introducing me to the interesting EPICC project and supervise me in the development of this master thesis. I am very grateful for his feedback and guidance which kept me focused. I also would like to thank my second supervisor Dr. Rainer Harms for his useful comments and time.

` Second I would like to thank the professors Paula and Basil Englis from Berry College for their help with finding the American student entrepreneurs. I would also like to thank them for making sure I would have a pleasant stay in America and I felt very welcome at your college. I would like to express my very great appreciation to Marsha Wilson for providing me with enough cases and questionnaires. I am very grateful for her time and patience. Without Jolien Pot the trip to the USA would not have been the same. I would like to thank her for the great time we had in the USA.

Furthermore I would like to thank my family and friends for supporting me during these months of writing my master thesis, but also during my whole Master's study. I know I was not able to join many activities and I am thankful for their understanding. In particularly I would like to thank Sandra van Beek and Tim Woertman for their support and interest in my study, Thijs van der Bij for his patience and trust in me, Niels Robben for improving my English and Lana Ronk for her support and encouragement.

Finally yet importantly I would like to thank all American student entrepreneurs for participating in this study. I know for many of them it was already a busy period with finals and their cooperation means a lot to me. Without them this research would not have been successful.

Zutphen, January 2014
Sanne Woertman

Abstract

Aim of this study. The aim of this study is to examine the relationship between network integration and the use of effectuation in the decision making process. This research builds on the effectuation literature and network theory. It aims at explaining the influence of networks on entrepreneurial processes. Effectuation research is encouraged by a lot of researchers and literature on the combination of networks and effectuation is limited.

Methodology. In this exploratory research a mixed method design in combination with a quasi-experiment is used. Data was collected among seventeen American student entrepreneurs in Rome, Georgia. The participants were found with the help of professional connections of the University of Twente and through snowball sampling. Participants were presented a case in which they had to solve ten decision problems using the think aloud method so that decision making processes could be analyzed. In addition they were given a questionnaire to be filled out afterwards. The questionnaire consisted of several questions regarding use of networks adapted from the survey of Cooper, Scott & Baggio (2009). The interviews were transcribed and coded in order to transform all data in quantitative measures. From the data two groups were created on network usage: high and low network integration. These groups were compared on five effectuation processes using the Independent Samples T-test. Control variables are tested for using the Two Way Between-Subjects ANOVA.

Results. The results indicate that no significant differences exist between student entrepreneurs having a low or high degree of network integration and the use of effectuation processes. The hypotheses could not be supported with empirical evidence. The findings showed that religion, experience, age, sex, and general reliance on network in the start-up phase do have a significant effect on use of the means based principle. Age significantly influences usage of embracing contingencies. All control variables significantly influenced the overall effectuation processes. Furthermore, an analysis of effectuation per problem area showed that significant differences exist between the two network groups in several areas.

Future research. Recommendations for future research refer to similar studies using a bigger sample size and a more in depth investigation of the principles of effectuation. In addition, it is recommended to implement a longitudinal design because networks and effectuation processes evolve over time. Another possibility is to focus on the different use of networks between causators and effectuators.

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Chapter 1 Introduction

1.1 Background

In 2012, 43% of the Americans were positive about the opportunities regarding entrepreneurship which was an increase of 20% in comparison with one year earlier (Global Entrepreneurship Monitor, 2012, p. 7). Furthermore, the Total Entrepreneurial Activity reached its highest level in 2012 since it was first reported in 1999 (GEM, 2012). Next to these numbers evidence is found within the literature that the field of entrepreneurship is experiencing an upward trend due to the increase of the number of articles published (Busenitz, West, Shepherd, Nelson, Chandler and Zacharakis, 2003).

In the field of entrepreneurship two frequently asked questions are what exactly do entrepreneurs? and how do they do it? (Moroz & Hindle, 2011). There are also studies in the field of entrepreneurship why some entrepreneurs succeed and some of them fail (Aldrich & Martinez, 2001). Although there are many obstacles, entrepreneurs differ a lot from each other and a few entrepreneurs are able to create better outcomes. One way to look at questions of 'how entrepreneurs do it' is by looking at the underlying entrepreneurial processes (Moroz & Hindle, 2011).The results from a literature review held by Moroz and Hindle (2011) indicate that different perspectives exist on answering these questions. Decision making processes used by entrepreneurs in comparison with managers is addresses by Busenitz and Barney (1997). Entrepreneurs were found to make more use of non-rational decision making processes due to the uncertainty and complexity that comes along with starting a business. Entrepreneurs making non-rational decisions are more likely to do so in certain circumstances: if entrepreneurs have started the firm themselves, if they are in a network, if they think they can use their own skills in a business and if they are more positive towards what their business will do as others in the same business (McCarthy, Schoorman & Cooper, 1993).

1.2 Context

Entrepreneurship as defined by Hindle (2010) is based on the entrepreneurial process literature: '*Entrepreneurship is the process of evaluating, committing to and achieving, under contextual constraints, the creation of new value from new knowledge for the benefit of defined stakeholders*' (Hindle, 2010; p.609).

A trend noticeable is the increase in studies about networks in the field of entrepreneurship (Jack, 2010). The resource based view of the firm (RBV) is a very often

used theory developed for explaining firm performance (Barney, 2001; Zaheer & Bell, 2005). The RBV focuses on internal resources and capabilities. Some scholars however, argue that besides these internal resources, one has to look at external resources. In contrast with the RBV, network theory focuses on the existence of external resources and capabilities through partnerships (Zaheer & Bell, 2005). Lumpkin, Moss, Gras, Kato and Amezcua (2013) studied whether entrepreneurial processes are influenced by the antecedents and outcomes that make entrepreneurship unique. Multiple stakeholders and access to resources are two of the antecedents that were studied in their relationship between outcomes such as satisfying multiple stakeholders. The study showed that the entrepreneurial dimensions autonomy, competitive aggressiveness and risk taking were influenced by the presence of multiple stakeholders. These findings indicate networks have an influence on entrepreneurial outcomes. In satisfying the multiple stakeholders and achieve solutions, entrepreneurial processes differed (Lumpkin et al., 2013).

In addition, there are three key elements which explain the impact of networks on entrepreneurial outcomes: content, governance mechanisms and network structure (Hoang and Antoncic, 2003). With network content the media through which firms have access to resources which are held by others is meant. Governance mechanisms is described as how the network exchange is coordinated and the emphasis is on the importance of trust between the actors. The last element, network structure, refers to the patterns of the relationship (Hoang and Antoncic, 2003). Today networks are seen as an important element of entrepreneurship (Jack, 2010)

1.3 Entrepreneurial processes

Studying entrepreneurship in a process oriented way provides '*much unexplored potential for understanding*' entrepreneurship as a research field (Moroz & Hindle, 2011, p. 3). It also offers a lot of potential for unifying the disparate research domain. When an academic looks at entrepreneurship with a focus on process, they look at what entrepreneurs actually do and how they do it (Moroz & Hindle, 2011). Different models exist based on this process oriented view, but in one important aspect the different views show similarities. The majority of the models indicate that the development of a new organization follows a '*linear, progressive and sequential process with identifiable stages*' (Steyaert, 2007, p.457). There is however, some critique on these models. The punctuated equilibrium criticizes these models on its linear character by introducing less predictable situations and stochastic models, which are part of the continuously changing world we live in today (Steyaert, 2007). There is however a need

for more empirical work and a harmonized model when it comes to entrepreneurial processes (Moroz & Hindle, 2011).

Earlier research on entrepreneurial processes suggested that entrepreneurs are in control of the situation, they know how to succeed and which market to target. However, with the effectuation model introduced by Sarasvathy (2001) was showed that entrepreneurs work in different ways to be successful and they work with the resources they possess. The effectuation model of Sarasvathy (2001) offers insight into what is generic and distinct to the entrepreneurial process (Moroz & Hindle, 2011) and represents a shift in the way we understand entrepreneurship (Perry, Chandler & Markova, 2011). Generic refers to '*all processes that are "entrepreneurial" do this*' and with distinct '*only entrepreneurial processes do this*' are meant (Moroz & Hindle, 2011; p. 1). Sarasvathy (2001) discusses the difference between causation and effectuation processes of entrepreneurs in the new venture development process. Causation is defined as '*processes that take a particular effect as given and focus on selecting between means to create that effect*' and effectuation as '*processes that take a set of means as given and focus on selecting between possible effect that can be created with that set of means*' (Sarasvathy, 2001; p. 245). Causation is coherent with planned strategy approaches and effectuation, in contrast, is coherent with emergent or non-predictive approaches (Chandler, DeTienne, McKelvie & Mumford, 2011). In addition, Sarasvathy (2001) introduced five different effectuation principles which will be discussed in Chapter 2.

The theoretical concepts of causation and effectuation can be applied in a broader context (Harms & Schiele, 2012). When entrepreneurs make their decisions while setting up a company based on effectuation, they stress the importance of partnerships more than causators do (Sarasvathy, 2008). For example the effectuation principle 'creation of the future' can be combined with networks because the effectuator tries to control over the future instead of predicting the future, by making use of alliances and partnerships (Chandler et al., 2011). In addition, effectuators frame the future as a result from co-creation with networks or partnerships (Dew, Read, Sarasvathy, Wiltbank, 2009). In contrast, entrepreneurs using a causal approach first define their market, select their segments and conduct competitive analyses (Dew et al, 2009) and may not address business opportunities regarding networks (Harms & Schiele, 2012). An effectuator is likely to describe his market as the community of people who commit enough resources in order to sustain the organization and the causator seeks to grab as much as possible of the independent market (Sarasvathy, 2001). The five

principles as such and combined with networks will be explained into more depth in Chapter 2.

1.4 Research gap

Although a lot of research already has been conducted in the field of networks, it is still important to keep focusing on the impact of networks on entrepreneurial processes and outcomes especially because there is a lack of qualitative studies (Hoang & Antoncic, 2003). In addition, entrepreneurs devote quite some time to the development and maintenance of relationships in order to access resources (Greve & Salaff, 2003). Furthermore, effectuation research is encouraged by a lot of researchers and literature on the combination of networks and effectuation is limited (Perry et al., 2011). As far as this literature study goes, limited authors actually tested the influence of networks on effectuation processes.

This will lead to the aim of this research which is to examine the relationship between the degree of network integration and the use of effectuation in the decision making process.

1.4.1 Research question

The following research question is formulated:

To what extent, does the degree of network integration influences the use of effectuation over causation processes?

To answer this question, entrepreneurs will be asked to work on a case in which they have to set up a coffee company from the beginning until year ten by thinking aloud. Using this method, the entrepreneurial processes can be analyzed and classified as either causal or effectual. After this qualitative interview the participants will fill out a questionnaire in which questions related to networks are asked.

1.5 Overview

In the remainder of this thesis networks, effectuation and the link between networks and effectuation is theoretically investigated in more detail (Chapter 2). The literature study is followed up by the methodology (Chapter 3) where after the research results are presented (Chapter 4). In the end results and limitations of this research are explained in the discussion (Chapter 5). The very last part consists of the conclusion and suggestions for future research (Chapter 6).

Chapter 2 Literature Review

2.1 Networks

There has been an increase in popularity of network theory in different research fields Borgatti & Halgin, 2011), but in the field of entrepreneurship this increase was 'dramatic' (Jack, 2010; p. 120). In network research there are two noticeable trends (Hoang & Antoncic, 2003). The first research stream is outcome-oriented and focuses on the impact of networks on entrepreneurial processes and outcomes. Entrepreneurial outcomes are the consequences of entrepreneurial processes, for example a new business, the exit of a business or merging with other business (Hoang & Antoncic, 2003). The other stream is process-oriented and investigates networks as the dependent variable. The creation and development of a network and the impact of new-venture creation on this development is assessed (Hoang & Antoncic, 2003). However, this second stream exist of fewer studies than the first research stream. Most studies so far have investigated the role of networks on entrepreneurial outcomes because since the rise of network research in the entrepreneurship field, scholars got the task to explore the consequences for firms being integrated in a network (Hoang & Antoncic, 2003).

Due to the increased popularity of network research amongst other things, nowadays some confusion exist about theorizing networks (Borgatti & Halgin, 2011). First of all a distinction can be made between network theory and theory of a network (Borgatti & Halgin, 2011). The latter describes the forms, characteristics and structures of the networks and why they are as they are. This research however focuses on network theory which is about the variables who influence network structures.

But what is a network? A network can be defined in its broad terms as '*a set of actors and the set of ties representing some relationship-or lack of relationship- between the actors*' (Brass, Butterfield & Skaggs, 1998; p.17). How a network is defined depends on which actors and what ties the researcher has chosen to study. The visual representation of a network consist of a drawing of dots which are connected with lines (Baggio et al., 2010). Network integration refers to the number of connections between individuals in a network (Louch, 2000). A network as defined by Brass et al. (1998) is in line with the definition of Hoang and Antoncic (2003) '*consisting of a set of actors and some set of relationships that link them*' (Hoang & Antoncic, 2003; p. 40). These rather general definitions require additional information (Jack, 2010). Networks are '*complex, take many forms, are fluid, flexible, and dynamic, constantly changing and evolving to suit individual and organizational needs*' (Jack, 2010; p. 134). Networks are often seen or referred to as groups (Borgatti & Halgin, 2011).

There is however one important difference between these two, namely groups have boundaries and networks do not. The comparison of networks and groups illustrates the broad sense in which the concept can be interpreted. This dynamic definition (Jack, 2010) is also used in this study, as networks are referred to in the broad sense and there are no limits to specific types of networks thus no boundaries.

The confusion about network research have led to some critiques (Jack, 2010). First of all a core network theory is lacking, research findings are inconsistent and definitions differ. Although confusion exists, network research can still be used because the majority of the studies can be classified under either outcome-oriented or processes-oriented studies explained by Hoang and Antoncic (2003). Studies using quantitative methods exist and there is a need for more qualitative studies in the field of networks because qualitative studies proved more insight into what is really going on in a network (Jack, 2010). Despite these critics, it remains important to study networks because of the significant influences networks have on individuals and organizations. Further, a lot of strategy and entrepreneurship academics have agreed upon the central role of networks in successful firms (Hite & Hesterly, 2001).

Through networks entrepreneurs have access to additional information and resources which are complement to their existing information and resources (Greve & Salaff, 2003). When these external resources and capabilities are available to the firm, this enhances entrepreneurial effectiveness and firm performance (Anderson, Dodd & Jack, 2010; Zaheer & Bell, 2005). Entrepreneurial growth is correlated with network practices (Anderson et al., 2010). In addition, networks are used by firms in order to reduce risk by sharing risk with external partners (Hoang & Antoncic, 2003).

An important aspect of networks is social capital which refers to the contacts that facilitate organizational goals and lead to successful results (Greve & Salaff, 2003). In this research there is not distinguished between different types of contacts. However it is important to note the existence of variety in important contacts that are part of the social capital in order to be clear about to whom participants in this study may refer to as part of their networks. Entrepreneurial networks can be either informal or formal (Littunen, 2000). These 'facilitating' contacts also include members of the informal network (Greve & Salaff, 2003). Network ties which are part of the social relationships of the entrepreneur such as friends and family, are called relationally embedded (Hite, 2005). A lot of resources for opportunities regarding firm success and survival can be found in relational embedded ties. These ties are multidimensional and differ in embeddedness which makes ties differ a lot

from each other in general. Relational embedded ties change over time and can be managed by the entrepreneur (Hite, 2005). The ties evolve by making use of three evolutionary processes: network entry, social leverage and trust facilitation.

In addition, various development phases of creating a new venture require different types of networks (Lechner, Dowling & Welpe, 2006). Aligning and adapting networks in order to gain access to the required resources for success is called 'the dynamic network evolution' (Hite & Hesterly, 2001). Different network types are part of the relational mix: social-, reputational-, marketing information-, co-opetition and co-operative technology networks (Lechner et al., 2006). The relational mix changes when firms go from one phase to another in the firm development. Networks evolve from identity- based to calculative-based as firms grow and mature (Hite & Hesterly, 2001). Identity-based networks refers to networks in which the majority of its members are from personal and social life. In contrast, calculative-based networks are based on market ties and provide greater resource availability.

Next to the use of different types of networks in different phases of creating a new venture, the frequency of contacts between the entrepreneur and other stakeholders varies in different phases (Greve & Salaff, 2003). In the first phase, motivation, the reliance on networks is limited the same way as in the third phase, establishment, where entrepreneurs either start the new firm or take over an existing firm. Entrepreneurs do not want to commit themselves to others immediately which might explain the low reliance on networks in the first phase, where entrepreneurs discuss their ideas on creating a new venture. This is important to mention, because novices are under study in this thesis and therefore this has to be taken into account as well. In the second phase, planning, entrepreneurs are preparing to set up a business and in this phase they relied most on their (social) networks. Furthermore, entrepreneurs devote quite some time to the development and maintenance of relationships in order to access information (Greve & Salaff, 2003).

Thus, although novices try not to commit themselves in a very early stage, this does not means they do not make use of networks at all as they make use of networks such as the identity-based networks (Hite & Hesterly, 2001).

Besides looking at different phases in the development of a new venture, there are three ways in which networks form (Sarasvathy, 2008): by random change, through path dependency and activation of an existing network. In the last form existing networks can be activated through causation or effectuation processes of the entrepreneur. Networks can be used to explain a lot of different processes and affect entrepreneurial outcomes (Baggio, Scott & Cooper, 2010; Hoang and Antoncic, 2003; Jack, 2010). This is important for this study

because it supports networks may be used to explain effectuation processes. Networks not only have an influence on individuals but also on how organizations are managed, which illustrates the impact networks may have (Jack, 2010).

One important element of relationships which characterize the relationship is strength (Perry-Smith, 2006). Improving stakeholder communication, cohesiveness, knowledge management and innovation improve the effectiveness of organizational collaboration (Cooper et al., 2009). However, this does not count for creativity in dealing with scarcity of resources, another entrepreneurial outcome influenced by social networks (Kodithuwakku & Rosa, 2002). 'Successful' entrepreneurs are found to be more creative in doing so (Kodithuwakku & Rosa, 2002; p. 431).

Relationships between entrepreneurs change due to the constantly changing environment and affect the personality of an entrepreneur (Littunen, 2000). The effect of network position on the creativity of individuals was tested by Perry-Smith (2006). Relationships with a lower degree and lower closeness and thus a weaker relationship, was found to be enhancing creativity. Strong relationships were not correlated with creativity. One explanation for this is that strong relationships are likely to exist between similar individuals and weak relationships are non-redundant connections (Perry-Smith, 2006). Strong relationships are often moving towards conformity bounded by rules, which does not enhance creativity of individuals in this network. Although strength of the network is beyond the scope of this thesis and therefore not particularly measured, it is important to take into account that strength may be of influence on creativity.

As discussed briefly in Chapter 1, there are three key elements which explain the impact of networks on entrepreneurial outcomes: network content, governance mechanisms and network structure (Hoang & Antoncic, 2003). Network content refers to the media through which firms have access to resources which are held by others. Governance mechanisms is described as how the network exchange is coordinated and the emphasis is on the importance of trust between the actors. Very often this is on the basis of open ended contracts. The last element, network structure, refers to the patterns of ties between actors within the relationship. The pattern of ties binding the firms together is a function of the value the firm derives from the relationship (Zaheer & Bell, 2005). There are many ways of measuring these patterns in order to describe how entrepreneurs make use of a network such as network size and network centrality (Hoang & Antoncic, 200). In this study the network structure is assessed by measuring network integration because the matter is not how big or how many access there is to networks, but if entrepreneurs make use of networks at all.

In Table 1 the literature on networks is summarized in order to clarify and to give an overview of the wide amount of literature.

Table 1. Summary of the network literature

Authors	Independent variable	Dependent variable	Keywords
Anderson et al., (2010) Greve & Salaff (2003) Hoang & Antoncic (2003) Kodithuwakku & Rosa (2002) Zaheer & Bell (2005)	Networks	Access to resources	Increased access, additional information, complementing existing resources, availability of capabilities, enhancing firm performance, advice, problem solving
Greve & Salaff (2003) Hite (2005) Hite & Hesterly (2001) Jack (2010) Lechner et al. (2006) Littunen (2000)	Networks	Identity, knowledge base and social networks	Identity-based networks, impacts on the personality of entrepreneurs, trust, social capital, informal versus formal networks, relationally embedded, relational mix
Anderson et al (2010) Carnabuci & Operti (2013) Greve & Salaff (2003) Lechner et al. (2006) Perry-Smith (2006)	Networks	New venture creation and innovation	Reuse of technologies, future creation, innovative capabilities
Cooper et al. (2009) Hite & Hesterly (2001) Hoang & Antoncic (2003) Lumpkin et al. (2011) Sarasvathy (2001) Zaheer & Bell (2003)	Networks	Beneficial resource exchanges	Importance of networks, competitive aggressiveness,
Hoang & Antoncic (2003)	Networks	Reduction of risk	Uncertainty, sharing risk

2.2 Effectuation

As discussed in Chapter 1, the focus in this study lies on the use effectuation over causation processes of entrepreneurs. A decision model in which effectuation processes are included is developed by Sarasvathy (2001). The reason for developing such a model was to provide theory on the creation of organizations. Creation is recognized as a view on entrepreneurial opportunities next to the allocative and discovery view (Sarasvathy, Dew, Velamuri and Venkataraman, 2003.

Effectuation is a useful theory of design which facilitates problem solving in uncertain situations (Sarasvathy, 2004). This is relevant for this study, because the participants solve problems in uncertain situation and the use of effectual processes that come along with solving these problems is predicted. There are three important subjects in which effectuation can be used as a tool for problem solving in uncertain situations (Sarasvathy, 2008). These are Knightian uncertainty, goal ambiguity and isotropy. The first aspect states the impossibility to anticipate on the future by probabilities. This problem is tackled by effectuators by creating the future instead of predicting it (Sarasvathy, 2001). Goal ambiguity emphasizes entrepreneurial preferences are not given (Sarasvathy, 2008) and an effectuator can help solving this problem by relying on who they are, what they know and whom they know. Furthermore, an effectuator changes goals along the way (Chandler et al, 2011). The last element refers to the continuously changing environment. Following isotropy, it is unclear which parts of the environment needs to be focused on and/or ignored (Sarasvathy, 2008).

In other words, the processes of effectuation are 'fundamental decision units' of how for example organizations and markets are created (Sarasvathy, 2001, p. 259). Markets are created when there is no supply nor demand and one or both need to be created for opportunities to exist (Sarasvathy et al., 2003). Effectuation is found to be significantly related with new-venture performance (Sarasvathy, 2008). With the introduction of this decision model, Sarasvathy forced a paradigmatic shift in the way entrepreneurship is understood (Perry et al., 2011).

It should be noted that Sarasvathy, as she discusses herself, did not want to position effectuation processes as superior or more efficient than causation processes, but provide an alternative logic for the decision-making process in uncertainty. In order to make the concept of effectuation better understandable and to discuss this complex process further into depth, a comparison between causation and effectuation is helpful.

Entrepreneurs who are assigned a task to create, for example, a professional website all have the same end goal which is to have the website finished. Neither causation nor

effectuation processes entails a better outcome. The main difference between causation and effectuation lies in the set of choices the entrepreneur has in creating this website. In the latter case, the entrepreneur is choosing between many effects by using specific set of means whereas causators choose between means to create an effect (Sarasvathy, 2001). Causators are trying to find existing opportunities whereas effectuators co-create these opportunities with stakeholders (Read, Song & Smit, 2009). It is not that an entrepreneur can be classified as either a causator or an effectuator. Both processes can occur simultaneously and overlap depending on the circumstances (Sarasvathy, 2001). Entrepreneurs use both processes in different combinations and use of the processes depends on the level of expertise and a firm's life cycle (Sarasvathy, 2008).

Causation can be classified best under the predictive strategies and effectuation processes are based on non-prediction, which explains the applicability in uncertain situations (Chandler et al., 2011). The distinctiveness of prediction and control as emphasized by Wiltbank, Dew, Read and Sarasvathy (2006) is illustrated by the use of effectuation processes. Entrepreneurs can use effectuation processes, which focus on control, to find out what the next step would be for their business. Another distinguish can be made by looking at the causal logic vs. the effectual logic which shows effectuators have a different view of the world (Sarasvathy, 2008). 'To the extent we can control the future, we do not need to predict it' implies the effectual logic (Sarasvathy, 2008; p. 17). The effectual logic shows that effectuators see the world as open, controllable and they see markets through an instrumental viewpoint without avoiding failure (Sarasvathy, 2008). The fact effectuators may have a different worldview compared with causators becomes clearer when looking at the causal logic: 'To the extent we can predict the future, we can control it' (Sarasvathy, 2008; p. 17). Effectuation is actor dependent, focuses on exploiting contingencies, the context of relevance lies in human action and new markets are created through cooperative strategies. In contrast, causation is effect dependent, focuses on exploiting of knowledge, the context of relevance lies in nature and market share takes place in existent markets through competitive analyses (Sarasvathy, 2001).

But how often do entrepreneurs make use of effectuation processes? Expert entrepreneurs use effectuation processes more than half of the time (Sarasvathy, 2008). Effectuation processes are correlated with entrepreneurial experience as discussed by several studies. However, effectuation does apply to entrepreneurs who are in the process of starting a new venture (Perry et al., 2011). Expert and novice entrepreneurs were compared in their use of predictive and non-predictive strategies (Dew et al., 2009). Expert entrepreneurs were

found to make more use of effectuation processes than novices did. However, their study included a small sample size and was not controlled for age differences which might explain the outcomes as well. There probably are differences between expert entrepreneurs and novices in their decision making processes, but these assumptions need to be taken with a lot of caution (Baron, 2008). The biggest threat here has to do with the post-test only design which is often used in entrepreneurship studies. In the post-test only design groups are compared on the base of a stimulus and no pre-test is conducted (Babbie, 2010). These designs are a threat for the internal validity because there are other factors such as age difference, selection of the entrepreneurs and differences in educational background which might be the explanation for the differences between expert entrepreneurs and novices (Baron, 2008). Therefore, more research on novices and the use of effectuation processes is needed and that is what this study provides.

'Effectual problems are problems of design and causal problems are problems of decision' (Sarasvathy, 2008; p. 73). Problems of design are solved with effectual logic in order to construct. Effectuators do not preset goals and do not follow a predicted path to reach these goals, but they live in reality and go from there to what is manageable and possible, preferring imaginative fiction and therefore design their path (Sarasvathy, 2004). This means effectuation includes creative thinking (Sarasvathy, 2001). Instead of focusing primarily on theories of the firm, scholars need to focus on theories of firm design, which is also the focus in effectuation research (Sarasvathy, 2004). Theories of firm design focus on the individual level and aim to look at the cognitive processes at the semantic level of entrepreneurs. By studying these processes, more insight is given about how entrepreneurs create firms (Sarasvathy, 2004). The focus needs to be also on theories of design because first of all, theories of the firm see the firm and the entrepreneur as the same. The distinguish needs to be made between these two because both the entrepreneur and the firm contribute in a various way to firm performance (Sarasvathy, 2004). Another problem with theories of the firm is that they do not enough mark differences between firms because they assume homogeneity of goals. The last critique on theories of the firm refers to the emphasis of opportunism (Sarasvathy, 2004).

Chandler et al. (2011) took effectuation research a step further and aimed at validating and creating measures for both causation and effectuation. Causation was found internal consistent and well-defined. However, effectuation was found to be multi-dimensional and measures were not that clear as for causation. The overall conclusion was in line with Sarasvathy (2008) stating that causation is not related with uncertainty. Experimentation, an

aspect of effectuation, is related with uncertainty (Chandler et al., 2011). With this results Chandler et al. (2011) positively contributed to the utility of the effectuation concept.

Effectuation research is useful because effectuators in generally get to explore more opportunities and those opportunities fit the entrepreneur better. This has to do with lower costs of failure which increase the number of opportunities taken and make the effectual entrepreneur survive longer. Effectuation may describe the thoughts and behavior related to creating a new business of entrepreneurs better compared to causation (Perry et al., 2011).

Even though it is useful, it is not always easy to study effectuation. Researchers are restricted because of the complexity and difficulties they encounter in developing and validating measures of effectuation (Perry et al., 2011). However, this does not mean it is impossible to study the concept and even though complexity is taken into account, it is used as a positive input for studying effectuation and learn from it by giving insights in the relationship with networks.

2.3 Networks and principles of effectuation

The theory of effectuation by Sarasvathy (2001) consists of five core principles: affordable loss, means based, creation of the future, use of alliances and partnerships and embracing contingencies. According to Chandler et al. (2011), these principles are essential components of effectuation and help defining it. All principles emphasize the reduction of prediction and aim at controlling uncertain situations (Sarasvathy, 2001) in which preset goals are changed along the way (Chandler et al., 2011). Although all principles share these commonalities, it can be said that the five principles are distinct and focus on different aspects of effectuation (Chandler et al., 2011).

In studying effectuation, Sarasvathy (2008) also refers to networks. The interaction between effectual commitments leads to both an increase in network size and available resources, which shows the importance of networks (Sarasvathy, 2008). This interaction also helps creating new markets because at the same time stakeholders experience restrictions with their goals, which involves them into new structures. The final result of the new created market is depending on several factors of the interactions between the partners: 'interactions that become embodied in actual additional commitments, those that do not, and non-negotiable exogenous states of nature' and these affect the network (Sarasvathy, 2008; p.108). It is not very odd that effectuators rely on actual commitments instead of predictions (Sarasvathy, 2008). In the starting phase of a new network, entrepreneurs cannot predict motives and visions from their partners nor can they fully predict their own. In addition to

this, one only becomes a member of a network through actual commitments (Sarasvathy, 2008). Actual commitments among stakeholders are drivers for the effectual model (Wiltbank et al., 2006). The principles of effectuation were assessed in order to go more in depth regarding this model. Means based, affordable loss and embracing contingencies help the stakeholders by making such effectual commitments because they provide criteria for taking action (Wiltbank et al., 2006).

The principles means based, use of alliances and partnerships and embracing contingencies are significantly related with new-venture performance (Sarasvathy, 2008). In another study all principles, except affordable loss, were found significantly related with new-venture performance (Read et al., 2009). Overall, all the principles contribute to the reduction of failure of organizations in uncertainty.

Furthermore, the link between networks and effectuation is emphasized with problems of design as explained in section 2.2. Effectuation refers to problems of design which requires creative thinking (Sarasvathy, 2001). Making use of networks enhances creativity (Rodan & Galunic, 2004; Perry-Smith, 2006).

2.3.1 Affordable loss

In uncertainty, effectuators seek to find out what they are maximally willing to lose instead of calculating the expected returns (Sarasvathy, 2008; Wiltbank et al., 2006). By mentioning what they are maximally willing to lose, entrepreneurs limit their risk (Read et al., 2009). This often involves external alliances and partnerships, because with any investment an entrepreneur is willing to lose a small amount of money (Sarasvathy, 2008). Relying on a network, the entrepreneur is able to test and explore markets without needing all the resources (Chandler et al., 2011).

Making use of the affordable loss principle the entrepreneur is forced to seek potential partners in their close area such as social network, geographic area or area of expertise (Sarasvathy, 2008). The stakeholders are selected on their ability to create new opportunities. Working together makes the firm rely on aspects of trust which is supported by power and influence of the parties (Hoang & Antoncic, 2003). This is also referred to as network governance. Network governance can create a cost advantage over bureaucratic mechanisms (Hoang & Antoncic, 2003). Network structure impacts the resource flow when different network positions are used (Hoang & Antoncic, 2003).

Entrepreneurs adopt their strategies to the limited means and prefer the possibilities that create more options in the future over short term returns (Sarasvathy, 2001). The

affordable loss principle makes it possible to bring ideas to market without a lot of expenses (Sarasvathy, 2008). Using networks entrepreneurs may see this as an opportunity for a valuable, low-cost link to critical resources. Access to resources and funding is influenced by the presence of multiple stakeholders (Lumpkin et al., 2011).

The ultimate decision how much the entrepreneur is maximally willing to lose also depends on the entrepreneur's commitments (Sarasvathy, 2008).

Hypothesis 1: The higher the network integration, the more the entrepreneur will make use of the affordable loss principle

2.3.2 Means based

The focus in this principle lies on the creation of new things on the base of existing means instead of meeting existing goals through the discovery of new ways to achieve them (Sarasvathy, 2008). When entrepreneurs base their decisions and actions on their identity, knowledge base, or social networks rather than superficial preferences, their decision are mean based (Sarasvathy, 2001). Using effectuation, the entrepreneur does not start with a specific goal, but with a set of means which emerge over time also because of the interaction with others. Identity (who I am), knowledge base (what I know) and social networks (whom I know) are the three categories of this principle (Sarasvathy, 2001) The categories are not mutually exclusive and independent. Identity may be changed by knowledge and social networks and vice versa.

After the entrepreneur started with these three categories, committing stakeholders are set in motion (Sarasvathy, 2008). 'Extreme' effectuators always begin with mentioning partnerships. In order to create identity, knowledge base and social networks entrepreneurs use networks. The benefit of a network is the increased access to information. Entrepreneurs use networks consistently for this purpose (Hoang & Antoncic, 2003). The access to knowledge which is often gained by the use of networks, influences firm performance (Zaheer & Bell, 2005). Furthermore, the access to diverse knowledge improves the creativity and ability to implement ideas of a manager (Rodan & Galunic, 2004). In order to positively affect the information flows, trust is critical when it comes to optimizing the collaboration (Hoang & Antoncic, 2003).

Hypothesis 2: The higher the network integration, the more the entrepreneur will make decisions based on means

2.3.3 Creation of the future

Instead of predicting the future, entrepreneurs can create the future because they feel sense of control (Sarasvathy, 2001). This may also mean the future is (co) created with internal or external partners. Entrepreneurs using processes of effectuation rely on partnerships instead of performing competitive analyses and favor them even before goals of the organization are clear (Dew et al., 2009). This implies the partners have a say in shaping these goals and creating the future of an organization by providing new means and opportunities (Sarasvathy, 2008).

As discussed before effectuation is based on non-predictive strategies and this has to do with the uncertainty in which effectuators operate (Chandler et al., 2011). In uncertainty, it is really hard to make predictions or statistical inferences and therefore entrepreneurs rely more on partnerships. The future is partially shaped by investors, partners and customers (Sarasvathy, 2005). Networks are socially constructed for future creation (Anderson, Dodd and Jack, 2010). Entrepreneurs create markets together with the stakeholders they bring in, in order to sustain their ideas (Sarasvathy, 2001). Furthermore, the structure of the enterprise is kept open depending on the commitments made. This also results in a less urge for the entrepreneur to predict the future. The ability of the firm to innovate by reuse of technologies, is influenced by an integrated network (Carnabuci & Operti, 2013). When firms combine a high integrated network with a diverse knowledge base, this even enhances the creation of new technologies.

Hypothesis 3: The higher the network integration, the more the entrepreneur will make use of the 'creation of the future' principle

2.3.4 Use of alliances and partnerships

Effectuators seek to reduce uncertainty and spread responsibilities by the use of alliances and partnerships instead of performing competitive analyses as causators will do (Sarasvathy, 2001; Chandler et al., 2011). In addition, the presence of multiple stakeholders influences the competitive aggressiveness of the entrepreneur (Lumpkin et al., 2011). By contracting with partners, firms seek to control the future (Sarasvathy, 2008). Many relations exist but those who share both the risk and the success of the collaboration encounter for effectual partnerships (Read et al., 2009). The majority of the effectuators in the study of Sarasvathy (2008) did not worry about competitors until their business was successful. The entrepreneur relies on his network for several reasons such as advice, problem solving and gathering business information (Hoang & Antoncic, 2003). Entrepreneurs who use effectual processes

emphasizing the importance of strategic partners (Sarasvathy, 2008) intent to reduce risk while working together with partners (Hoang and Antoncic, 2003). They see the use of alliances and partnerships as a positive element in order to achieve beneficial resource exchanges. In addition to this, innovative capabilities and network structure both enhance organizational performance (Zaheer & Bell, 2005). Causators first define the market whereas effectuators aim to create the market together with multiple stakeholders, not worrying about the opportunity costs (Sarasvathy, 2001). By participating in shaping the organization and her goals, the partners have influence on future outcomes (Wiltbank et al., 2006) Entrepreneurs may also make use of alliances and partnerships by involving customers as partners or sell to them in an early stage (Sarasvathy, 2008).

Hypothesis 4: The higher the network integration, the more the entrepreneur will make use of the 'use of alliances and partnerships effectuation principle' in the decision making process

2.3.5 Embracing contingencies

This principle emphasizes the leverage of surprises instead of avoiding them (Sarasvathy, 2001). Unexpected events are seen by effectuators as opportunities to gain control over, but also to learn from the positive and negative contingencies and seek new opportunities in it (Sarasvathy, 2008; Dew et al., 2009). Effectuators in this case, remain very flexible in order to respond quickly in uncertainty (Chandler et al., 2011) Furthermore, uncertainty is not seen as a disadvantage but is used to adapt the loosely set goals from the beginning (Sarasvathy, 2008). The entrepreneur indicates that surprise is good and is willing to change when new information is available or when they are confronted with means or surprises (Read et al., 2009).

This principle is not expected to be positively related to networks because it refers more to the degree to which the entrepreneur embraces contingencies instead of avoiding them (Sarasvathy, 2001). This can be very broadly interpreted. Furthermore, firms use networks also to reduce the risk in the unstable environment (Hoang & Antoncic, 2003) and this would not be in line in this aspect with the principle of Sarasvathy (2001). The network may restrict a firm in embracing contingencies due to rules and contracts within the network because all stakeholders share both the risk and success.

Hypothesis 5: The lower the network integration, the more the entrepreneur embraces contingencies

Chapter 3 Methodology

In this chapter the research methodology will be explained. This research consists of a combination of qualitative and quantitative research, which is also referred to as a mixed method design. The mixed method design is combined with a quasi-experiment in order to be able to build on existing theories (Snow & Thomas, 1994). The mixed method design is chosen because there is a need for it in the field of networks in order to build on existing theories and develop more dynamic theories in the entrepreneurial context (Hoang & Antoncic, 2003; Greve & Salaff, 2003). Furthermore, research results will be richer and more reliable when a mixed method approach is used (Mingers, 2001). This is because in real life a lot of pluralism and a plurality of structures exist. A mixed method approach can help to effectively deal with the richness of the real world. Adding to that, mixed method research can also be used in order to increase the generalizability of the results (Johnson, Onwuegbuzie & Turner, 2007). The mixed method approach is a creative form of research which is not limiting the researcher (Johnson et al., 2007). The approach is complementary and not constricting the choices of the researcher in answering the research question.

This study is exploratory; the relationship between networks and the use of effectuation processes is explored. The mixed method design is combined with a quasi-experiment. A quasi-experiment distinguishes itself from classic experiments because the lack of random assignment and a control group (Babbie, 2010). It permits the researcher to make claims stronger in order to valid research results (Snow & Thomas, 1994).

3.1 Research setting and instruments

After an introduction to the case [1] and the think aloud method, all the respondents were presented the case including ten decision problems regarding the start-up of a fictional coffee corner called Coffee Inc. In the first problems the participants had to discuss to whom they want to sell coffee, for how much and how. Here the market was identified and defined including the main competitors of the coffee company. In the starting phase Coffee Inc. experienced some trouble with financing. The student entrepreneurs had to make decisions on how to get the money they needed and after this the company was able to grow. The participants chose between one-liners or came up with one themselves. When the company reached its fifth year of operation there was space for redesign. Other decision problems dealt with personnel, hiring new staff and goodwill. In the end the students entrepreneurs could

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[1] The case and questionnaire are available on request via Rainer Harms (r.harms@utwente.nl) or Martin Stienstra (m.r.stienstra@utwente.nl)

either sell the coffee corner to one of its main competitors or get involved in the stock market. The student entrepreneurs did not have to prepare themselves before participating in the case and as soon as the case begun, the researcher was not allowed to speak anymore. The case is based on the case of Sarasvathy (2001) and was slightly modified to fit the country and fictional company by EPICC members. While thinking aloud, thus saying anything that comes to their minds, the student entrepreneurs worked through the case setting up Coffee Inc. from the beginning until year 10. The think aloud method is used in this thesis because the method can be used to get to know more about the cognitive processes of entrepreneurs (van Soomeren, Barnard and Sandberg, 1994). Effectuation processes are measured in this study using the think aloud method, which is also studied by Sarasvathy in the same way. The case constitutes the qualitative part of this study and was followed by a survey. The survey was developed by the members of the EPICC project, except for a few questions on networks. The questions were based on the survey of Cooper et al. (2009) and this survey will be explained in section 3.4.

3.2 Think aloud method

By using the think aloud method, the scientist can get to know more about the cognitive processes of, in this case, the student entrepreneurs (van Soomeren, Barnard and Sandberg, 1994). Information about the cognitive processes can be best obtained by instructing the participants to think aloud while they solve a business case (Ericsson & Simon, 1981). In addition, the think aloud method makes it possible to study decision-making processes of entrepreneurs and the amount of behavior that can be studied increases a lot using this method (Sarasvathy, 2008) because the protocols give full information (Ericsson & Simon, 1981). The think aloud method results in protocols which provide 'a valuable source of data about the sequence of events that occur while a human subject is solving a problem or performing some other cognitive task' (Ericsson & Simon, 1981; p. 10). Protocols which do not provide this valuable source of data may have experienced reactivity. Reactivity refers to changes in the thought processes due to verbalization of these processes (Russo, Johnson & Stephens, 1989). However, in a comparative study one part of the subjects was asked to think aloud while working on a case and the other part was not. The results showed there was no difference in performance or outcome of the case between these two groups of subjects, meaning the think aloud method does not point the subjects in a certain direction (Ericsson & Simon, 1981). Being sure reactivity does not occur in verbal protocols implies adding a silent control group who do not think aloud (Russo et al., 1989) However, a trade-off needs to be

made and the benefit of the think aloud method weights heavier than the costs: no other method is better at obtaining information about cognitive processes as verbal protocols (Russo et al., 1989). Subjects who explain their behavior after they performed a task may include retrospective biases (Sarasvathy, 2008). Using the think aloud method allows the participant to solve the problems as they think, which prevents this bias.

The method implies the participant is thinking aloud as much as possible without being interrupted and is encouraged by the researcher to keep thinking aloud if necessary (van Soomeren et al., 1994). Encouragement of the researcher is important to prevent nonveridical protocols (Russo, et al., 1989). Nonveridical protocols include errors as they report thoughts that did not occur or do not report thoughts that occurred. When participants think aloud as much as possible, this results in thoughts that come naturally and are not forced by the researcher (Van Soomeren et al., 1994). The subjects do not need to explain their thoughts hence this is the task of the researcher, but subjects only verbalize the thoughts as they emerge (Ericsson & Simon, 1981).

Before any subject has performed a task the researcher very often already developed a coding scheme in which the possible information that will be gathered is included (Ericsson & Simon, 1981). This means the researcher does not have to recognize cognitive processes himself but makes choices between categories. This also counts for this study.

3.3 The coding process

All interviews were recorded, transcribed and coded. Every word in the recorded interviews was transcribed into a written protocol, including the 'euhm' and 'ehhs' in order to prevent data loss and be able to follow the decision-making process completely (van Soomeren et al., 1994). Pauses within a sentence were marked with dots and longer pauses resulted in a new sentence. Intonation of the participants was not marked because that is beyond the scope of this study. The transcriptions are required to start the coding process. An example of a transcription can be found in Appendix A.

The written protocols were analyzed using the coding scheme developed by EPICC members, who based this scheme on Sarasvathy (2008). Table 2 presents the coding scheme used in this research. The first step was to study the principles of causation and effectuation in order to be able to code particular behavior of the participants. After this was assessed whether decision making processes of the entrepreneur could be classified as causal or effectual and under which principle this behavior could be classified. Both processes occurred in the case, and sometimes even in the same question. When the principle was linked with the

behavior the corresponding letter of the principle was written with the corresponding number of the sentence in the codebook. An example of a codebook can be found in Appendix B. Furthermore, a small argument why this code is assigned to certain behavior was provided and the total number of coding for one participant was marked after the code letter.

Causal	Effectual
P-Prediction of the future	C-Creation of the future
G-Goal-driven	M-Means-based
R-Expected returns	L-Affordable loss
B-Competitive analysis	A-Use of alliances or partnerships
K-Avoid contingencies	E-Embrace contingencies
X-Causal (no subcategory given)	N-Effectual (no subcategory given)

Table 2: Coding scheme, based on Sarasvathy (2008: p.55)

After the transcripts were coded, the temporal sequence is shown by means of tables in order to have an overview of the causal and effectual processes used per problem for the whole case.

3.4 Network survey

As discussed in Chapter 2 network integration refers to the number of connections between individuals in a network (Louch, 2000). Networks are in this research studied at the individual level, which means the focus lies on relationships of entrepreneurs with other individuals or organizations (Hite, 2005). The survey of Cooper et al. (2009) is used to measure network integration because it is validated. That is why it can be used and it fits this research because next to the fact it measures frequency of contacts, it stresses complimentary questions which can be linked with the concepts of network content, governance mechanisms and network structures which impact entrepreneurial processes and entrepreneurial outcomes (Hoang & Antoncic, 2003). In Table 3 the questions of the survey of Cooper et al. (2009) can be found. Responses were gathered using a five point Likert scale. The first question in this survey refers to the network structure, as it says something about the frequency of the contact. An entrepreneur who never or seldom has contact with other organizations has a low degree of network integration and one who has quit often or very often contact has a high degree of network integration. The second question is also part of the network structure. Zaheer and Bell (2005) explain the pattern of ties binding the firms together is a function of the value the firm derives from the relationship.

The second element, governance mechanisms can be linked best with the last question of the network survey because it refers to the power and influence existing in the collaboration and network content deals with the third question because it deals with what the entrepreneur has to offer in the relationship.

1. How frequently does your organization have contact with other organizations?
2. To what extent do you think this is useful/necessary for your business?
3. To what degree do you agree that your organization has a lot of skills and knowledge to contribute to the creation of a new product/service in collaboration with other organizations?
4. To what degree has your organization power/influence within collaboration?

Table 3: Survey questions used in this study adapted from Cooper et al. (2009)

3.5 Sample

The aim was to collect data among twenty American student entrepreneurs. American student entrepreneurs are chosen because no differences between countries exist in the use of networks in the firm development phases between expert entrepreneurs and novices (Greve & Salaff, 2003). Most of the participants were found with the help of professional connections and visiting professors of the University of Twente. The professors work at Berry College in Rome, Georgia where the interviews were held face-to-face. Berry College is chosen because it is entrepreneurial oriented. It offers students the possibility to start up business in courses and it's one-liner is 'experience it firsthand'. All participants study or have studied at Berry College. Only students who live and study around Rome, Georgia are interviewed in order for consistency.

Student entrepreneurs were asked to sign up for the interviews and in order to motivate them they got bonus points if they showed up for the interview. Other participants were found using the snowball-method. Students entrepreneurs were asked at the end of the interview whether they knew others. Furthermore, there was actively searched for student entrepreneurs on the campus of Berry College by giving presentations in classes, send emails to students associations and ask around on campus. The final sample exists of seventeen American student entrepreneurs the youngest being 19 years old and the oldest 23 years old. 9 participants are female, 8 male. The student entrepreneurs operate in a wide variety of businesses such as hunting equipment, photography services, golf courses and surfboards.

The entrepreneurs are in the process of starting their first own business which means they are seen as novices. The decision was made to study novices because differences exist in the use of effectuation processes between novices and expert entrepreneurs (Sarasvathy, 2008). However, effectuation does apply to entrepreneurs who are in the process of starting a new venture (Perry et al., 2011) and a lot of studies on effectuation already focus on expert entrepreneurs (Sarasvathy, 2008). In order to have a homogeneous group of participants, participants with about the same level of experience as an entrepreneur (0-5 years) are included in this thesis. All participants have had classes in entrepreneurship, have started a business in class or have worked at student enterprises. Although focus on networks and network type differ, using networks apply to all phases of new venture building which means novices can be studied here (Greve & Salaff, 2003). In Table 4 specifications of the sample are given.

Gender	Male	47&
	Female	53%
Age	Below 20	6%
	20-25	94%
Marital Status	Married	0%
	Single	100%
Religion	Christian Catholic	71%
	Christian Protestant	23%
	Other	6%
Work experience	Less than 5 years	77%
	More than 5 years	23%
Study background	Business study	88%
	Other	12%

Table 4: Sample specifications

3.6 Operationalization

3.6.1 Independent variable

Degree of network integration represent the independent variable in this research. This is measured with the five-point scale questions in the survey based on the survey of Cooper et al. (2009) as discussed in section 3.4. The questions of this survey can be found in Table 3. In addition, two five-point scale questions already present in the existing survey will be used to measure the degree of network integration as well. These are: *1. I used a substantial number of agreements with customers, suppliers and other organizations and people to reduce the amount of uncertainty. 2. I used pre-commitments from customers and suppliers as often as possible.*

To test all hypotheses, a variable was computed summing the four questions from the questionnaire of Cooper et al. (2009) and the two questions from the existing Chandler survey mentioned above.

After this the variable was recoded into a new variable which indicated whether the

participants are integrated into a network which could be either low (1) or high (2). Student entrepreneurs who scored a total of 21 or higher on all the six network questions are considered to be highly integrated into a network and network integration is considered low for entrepreneurs scoring <21.

3.6.2 Dependent variable
The dependent variable in this research are effectuation processes of which all five principles are part of: creation of the future, affordable loss, means based, embracing contingencies and use of alliances and partnerships. Behavior could also be causal and was measured with the principles: prediction of the future, goal driven, expected returns, competitive analysis and avoid contingencies. However, when testing the hypotheses the causal principles will not be used. Effectuation and causal processes are highlighted while the entrepreneurs went through the case. Behavior is coded as discussed in section 3.3 and this shows patterns of the use of effectuation of the student entrepreneur.

A continuous variable was created for each of the ten decision problems, stating the total amount of text coded. This variable was created in order to calculate the total use of effectuation per principle in percentages before being able to perform an Independent Samples T-test. For example, the total amount of 'affordable loss' coded text is computed with a new variable by adding all affordable loss coded text for each problem. The percentage of the use of the affordable loss principle states this new variable divided by the total amount of text coded. This was repeated for each effectuation principle in order to test the specific hypothesis.

3.6.3 Control variables
Whether networks impact effectuation processes is tested and there is controlled for the variables gender, age, religion and experience. To control for general reliance on networks due to the start-up phase there will be assessed among the entrepreneurs how early they committed themselves in starting their business. It is important to test these control variables because quasi-experiments lack control groups. This means there might be alternative explanations for the use of effectuation (Shadish, Cook & Campbell, 2002).

To control for gender a variable representing gender was computed with 1 representing males and 2 females. The variable age was recoded into a new variable (1=19, 2=20, 3=21, 4=22, 5=23) representing the age of the participants. The variable representing experience was computed summing the variables years of working and years of university. This variable was recoded into a new variable representing the years of experience from 3

until 11 years including values. To control for religion the variable was valued 1. None/Atheist, 2. Christian Protestant, 3. Christian Catholic and other Christian, 4. Hindu, 5 Moslem, 6. Buddhist, 7. Other and 8. Jewish. General reliance on networks in the start-up phase was measured with the question whether the student entrepreneurs tried to get resource commitments and sales commitments as early as possible. The variable was computed including 5 values numbered from 1 to 5: not at all, a little, somewhat, to a large extent and absolutely. 1 being not at all, 5 being absolutely. Recoding is necessary to perform the ANOVA in SPSS.

3.7 Integrity

Validity is a key criterion for evaluating research (Van Aken, Berends & van der Bij, 2010). The way this research is conducted as described above, must lead to believe the results will be adequate. In addition, validity refers to the extent to which researchers measure what they intend to measure (Babbie, 2010).

Face validity refers to whether indicators seem a reasonable measure for variables (Babbie, 2010). In this case, the amount of contacts with other organizations seems like a proper way to assess network integration. The questionnaire was taken from Cooper et al. (2009) which means it has been validated already.

Effectuation was measured using a qualitative method. The instrument is based on a case developed by Sarasvathy (2008) and used by a lot of academics working for the EPICC project afterwards. Therefore one may assume the case is reliable and the quality of this measurement is reasonable because many researchers have tested effectuation with this method.

Before the real interviews were held at Berry College, one test interview in the Netherlands was performed under the supervision of one of the EPICC members. After this interview feedback was provided in order to arrive at Berry College well prepared for the interviews. This test interview also included practicing the transcription and coding process in order to perform these processes at best.

The researcher was not allowed to talk during the interviews, and therefore no probing techniques are used. The validity of the answers given by the participants was assessed by asking some questions after the case regarding clarity of the case and state of mind of the interviewee. It was tested whether the interviewee encountered problems with thinking aloud or felt any pressure while solving the case. Most of the interviewees found it easy to think aloud and did not even look at the clock while working on the case.

With regard to coding, the encoding reliability was increased because the coding scheme was already developed before the protocols were gathered (Ericsson & Simon, 1981). This was increased because the different coders will code the same information because of the already well defined coding scheme and therefore did not have to recognize cognitive processes themselves. Furthermore, transcripts were coded by two independent coders after this consensus was met. This is also referred to as inter-rater reliability (James, Demaree & Wolf, 1984). Only reporting the percentage of agreement between coders is not enough because it does not control for agreements expected by chance (Hallgren, 2012). The inter-rater reliability can be assessed with the weighted kappa coefficient in order to test whether consensus between independent coders is expected by chance. A Cohen's kappa ranges from -1 to 1 with 1 stating perfect agreement and -1 perfect disagreement. The aim was to reach substantial agreement which means a kappa between the range from 0.61 to 0.80 (Hallgren, 2012).

The Cohen's kappa coefficient can be calculated with the following equation:

$$\kappa = \frac{\Pr(a) - \Pr(e)}{1 - \Pr(e)},$$

Pr(a) is representing the percentage of agreement between the coders and Pr (e) states the percentage of agreement expected by change (Hallgren, 2012).

Before calculating the Cohen's kappa coefficient it is determined that due to the time insensitivity of assessing the inter-rater reliability, only a part of the transcripts is coded by two independent coders and the remainder by a single coder. This kappa coefficient is generalizable to the full dataset (Hallgren, 2012).

During the coding process the possibility existed to code effectuation processes or non-effectuation processes. The first coder coded 19 effectuation processes out of 48 total coded text and the second coder coded 18 effectuation processes out of 41. The probability for obtaining the percentage of agreement due to chance for effectuation is computed as (19/48)= 0.395 x (18/41)= 0.439 = 0.173. The probability for obtaining the percentage of agreement due to chance for non-effectuation is computed as (1-0.395) x (1-0.439) = 0.339. The total probability of chance is 0.173+0.339= 0.512. Now the equation can be filled out, thus Cohen's kappa coefficient = (0.85-0.512) / (1-0.512) = 0.69. This means the aim of a substantial agreement is fulfilled.

Two other aspects of validity are internal and external validity (Van Aken et al., 2010). Internal validity refers to 'inferences about whether observed co-variation between A and B reflects a causal relationship from A to B in the form in which the variables were

manipulated or measured' (Shadish et al., 2002; p. 54). There are several threats regarding the internal validity of this research, especially because of the lack of random assignment and a control group. The first is selection which refers to the fact that the subject in this sample had the possibility to select themselves because they were interested in the topic under study. This is because after an introduction of this research, student entrepreneurs were able to sign up to participate in this research. Another threat is attrition which refers to the loss of respondents to the measurement (Shadish et al., 2002). Because of the duration of the case some respondents did not have enough time to fill out the complete questionnaire which means some questions measuring networks remain unanswered. Due to the chosen research design there is a lack of randomization and a control group. This is a threat to the internal validity because there may be confusion about which variable occurs first. Is it effectuation processes that influence the use of networks or is it networks that influence effectuation processes? However these threats are reduced by using both qualitative and quantitative measures. The use of networks is both measured in the interview and in the questionnaire and the qualitative interviews using the think aloud method give the best possible way of gathering information about the cognitive processes (Russo et al., 1989).

External validity refers to 'inferences about the extent to which causal relationships holds over variations in persons, settings, treatments and outcomes' (Shadish et al., 2002; p. 83). This research was conducted only at Berry College in Rome. Because of the big cultural differences within the United States, the results may not be generalizable to all Americans. Furthermore, it may not be generalizable to all entrepreneurs because there was only chosen for student entrepreneurs. However, this was not the aim of this explorative study as it aims at assessing the impact of networks on effectual processes.

3.8 Data Analysis
Because there is made use of both qualitative and quantitative research methods, different methods of analysis are required. To address the quantitative part, first descriptive statistics are used in order to give an overview of the participants' characteristics, use of networks and decision making processes.

The aim of this research is to determine whether networks have an influence on effectuation processes of American student entrepreneurs. In the first four hypotheses is hypothesized a higher network integration leads to a higher use of effectuation principles. However the last principle, embracing contingencies is expected to lead to a higher use of the principle with a lower network integration. To test the hypotheses, the Independent Samples

T-test will be performed in order to compare the means. This method is chosen because two groups are compared: entrepreneurs with a low network integration versus entrepreneurs with a high network integration. It is impossible for participants to be in both groups.

First the qualitative data gathered from the interviews is transformed into quantitative data by coding, which is a requirement for using SPSS Statistics. New variables will be computed for low and high degree of network integration and percentage of the use of effectuation processes for each principle. After this, there will be tested for normality of the sample using a Shapiro-Wilk test before determining the exact test for obtaining the P-values. Normality of the sample is a requirement for performing an Independent Samples T-test (Field, 2009). Because the two means are expected to be different (entrepreneurs with a high degree of network integration are expected to score different than entrepreneurs with a low degree of network integration on making use of the effectuation principles), the p-values need to be divided by two (De Veaux, Velleman & Bock, 2012). The p-values will give an insight whether the hypotheses can be supported or need to be rejected.

There will be controlled for the variables mentioned in section 3.6. using a Two Way Between Subjects ANOVA. This test is used because the Independent Samples T-test does not offer space to test for control variables on itself. With using the Two Way Between Subjects ANOVA it can be tested whether the control variables have a significant effect on the dependent variable being effectuation processes (Field, 2010).

Chapter 4 Results

In this chapter the research results are presented. Before looking at the hypotheses, the internal consistency of the questions measuring networks is assessed. The reliability of the scale measuring networks is tested using the Cronbach's Alpha test for internal consistency. The Cronbach's Alpha is .697 which means the scales are reliable. The hypotheses are tested using the Independent Samples T-test in section 4.1 until 4.5. The general conclusion is that none of the hypotheses can be supported. Furthermore, there is tested for control variables performing a Two Way Between Subjects ANOVA in 4.6. In the last section the overall use of effectuation processes is addressed analyzing each decision problem.

As explained in the operationalization's section in Chapter 3, the degree of network integration of participants could either be low (1) or high (2). The results indicate that 56% of the participants are considered to have a high degree of network integration and 39% of the participants a low degree of network integration.

4.1 Network integration on the affordable loss principle

In the first hypothesis was hypothesized that the more the entrepreneur is integrated into a network, the more he will make use of the affordable loss principle. In order to test this hypothesis the affordable loss principle was coded in the codebook and the amount was counted per problem. Further details on calculating the percentage of usage of the affordable loss principle can be found in the operationalization's section in Chapter 3, including this information for the other four principles. The percentage of usage of the effectuation principles was calculated in order to be able to perform the Independent Samples T-test adequately. Examples of entrepreneurs using the affordable loss principle in this study are:

Interviewee: 'outsourcing is popular, I wouldn't undertake it myself because it is much more expensive'

Interviewee: 'we don't have a lot of money and should only buy things we really need'

Interviewee: 'I would take the initiative for this project I think at this point. Your sales are high enough to kind of justify making that investment'

Testing the normality of the sample is a requirement for performing an Independent Sample T-test (Field, 2010). The normality is tested using the Shapiro-Wilk test for normality and the data did not significantly deviated from a normal distribution (Table. 5) which means the Independent Samples T-test can used.

Network_integration		Shapiro-Wilk		
		Statistic	Df	Sig.
Percentage affordable loss	Low	,914	6	,461
	High	,932	10	,471

Table 5. Results hypothesis 1 Shapiro-Wilk test for normality

From the sample of student entrepreneurs (n=16) no significant difference is found between a low or high network integration and the use of the affordable loss principle (T= 1,684, p=.4445) which means hypothesis 1 is not supported. The variances are assumed equally with α= 0,05 (F=.065, p=.803). This means student entrepreneurs having a high degree of network integration (M= .07) do not significantly use the principle of affordable loss more than student entrepreneurs having a low degree of network integration (M= .08). Table 6 represents the results from the Independent Samples T-test. Because a difference between the means is expected, the p-value is divided by two.

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference
Percentage creation of the future	Equal variances assumed	,065	,803	1,684	14	,114	,017
	Equal variances not assumed			1,602	9,106	,143	,017

Table 6. Results hypothesis 1 Independent Samples T-test

4.2 Network integration on the means based principle

In the second hypothesis was hypothesized that entrepreneurs having a higher degree of network integration will use the means based principle more than entrepreneurs with a lower degree of network integration. Examples of entrepreneurs using the means based principle in this study are:

Interviewee: 'I will try not to go corporate because that kind of gives it that unique feel.. ehm maybe a different atmosphere with the company if you don't go corporate'

Interviewee: 'venture capitalists are a little more experienced in helping entrepreneurs starting up a business and they also know about catering'

Interviewee: 'that's cheap coffee, that's really cheap coffee, to get it that low like a dollar or less for a cup of coffee it is either not good coffee or you are really efficient

The normality of the sample was tested using the Shapiro-Wilk test and it shows that the data does not significantly deviate from a normal distribution so the Independent Samples T-test is used.

	Network_integration	Shapiro-Wilk		
		Statistic	df	Sig.
Percentage means based	Low	,822	6	,092
	High	,891	10	,175

Table 7. Results hypothesis 2 Shapiro-Wilk test for normality

The results of the Independent Samples T-test show no significant difference exist between student entrepreneurs with a low or high degree of network integration and the use of the means based principle (T=.603 ,p=.278) (Table 8). The variances of both groups are assumed equally with α= .05 (F=3,522, p= .082). In contrast to what was expected, the low network integration group used the means based principle more often than the high network integration group of entrepreneurs. Hypothesis 2 is not supported.

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference
Percentage means based	Equal variances assumed	3,522	,082	,603	14	,556	,030
	Equal variances not assumed			,758	11,197	,464	,030

Table 8. Results hypothesis 2 Independent Samples T-test

4.3 Network integration on the creation of the future principle

In the third hypothesis was hypothesized that a higher degree of network integration of an entrepreneur makes entrepreneurs use the creation of the future principle more than entrepreneurs with a low degree of network integration. A few examples of usage of creation of the future principle in this study are given:

Interviewee: 'I think there is just a lot potential from that point on so that's what I would do'

Interviewee: 'But potentially everyday it could be their staple coffee in the morning'

Interviewee: (one-liner) 'college students awake all over the country'

Interviewee: 'I would host a study night or something'

The distribution of the sample is normal and therefore the Independent Samples T-test can be used. The results of the Shapiro-Wilk test are shown in table 9.

Network_integration		Shapiro-Wilk		
		Statistic	df	Sig.
Percentage creation of the future	Low	,956	6	,790
	High	,976	10	,938

Table 9. Results hypothesis 3 Shapiro-Wilk test for normality

From the sample of student entrepreneurs (n=16) no significant differences are found between a low or high network integration and the use of the alliances and partnership principle (T= 1,684, p=.057) which means hypothesis 3 is not supported. The variances are assumed equally with α= 0,05 (F=.065, p=.803). This means student entrepreneurs having a higher degree of network integration (M= .03) do not significantly use the principle of creation of the future more than student entrepreneurs having a low degree of network integration (M= .05). Table 10 represents the results from the Independent Samples T-test.

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference
Percentage creation of the future	Equal variances assumed	,065	,803	1,684	14	,114	,017
	Equal variances not assumed			1,602	9,106	,143	,017

Table 10. Results hypothesis 3 Independent Samples Test

4.4 Network integration on the use of alliances and partnerships principle

In the fourth hypothesis was hypothesized that a higher degree of network integration of the entrepreneur the more these entrepreneurs make use of the alliances and partnerships principle. Examples of entrepreneurs using the principle of alliances and partnerships in this study are:

Interviewee: 'I would probably send out surveys ask people I know ehm I think just asking people word of mouth is a good way to do this'

Interviewee: 'I would have a friend of the family help me who is experienced in catering'

Interviewee: 'I think the more reliable option is option two borrowing from old friends from the university and your old student job'

Interviewee: 'and maybe have like a third party come in someone who… another entrepreneur who has been successful come in and say'

In table 11 the results of the Shapiro-Wilk test for normality is shown. The data did not deviate significantly from a normal distribution so the Independent Samples T-test is used.

	Network_integration	Shapiro-Wilk		
		Statistic	Df	Sig.
Percentage use of	Low	,928	6	,565
partnerships	High	,922	10	,376

Table 11. Results hypothesis 4 Shapiro-Wilk test for normality

From the sample of student entrepreneurs (n=16) there is no significant difference found between a low or high network integration and the use of the alliances and partnership principle (T= 1,288, p=.1095). The variances are assumed equally with α= 0,05 (F=.000, p=.999). This means entrepreneurs having a higher degree of network integration (M= .04) do not significantly use the principle of use of alliances and partnerships than entrepreneurs having a low degree of network integration (M= .06). Table 12 represents the results from the Independent Samples T-test. Hypothesis 4 is not supported.

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference
Percentage use of partnerships	Equal variances assumed	,000	,999	1,288	14	,219	,014
	Equal variances not assumed			1,305	11,107	,218	,014

Table. 12 Results hypothesis 4 Independent Samples T-test

4.5 Networks and embracing contingencies

In this last hypothesis it was hypothesized that entrepreneurs with a lower degree of network integration will make more use of embracing contingencies than entrepreneurs with a high degree of network integration. Examples of entrepreneurs using embracing contingencies while solving the case in this study are:

Interviewee: 'ehm and that also goes back to the American tradition ehm investing in.. this investing in the next generation and it's a really great thing'

Interviewee: 'I think I would go with the IPO'

Interviewee: 'There is different coffee available at the university but if it's not very good coffee it is not something I worry about'

The data did not deviate significantly from a normal distribution so the Independent Samples T-test can be used. The result of the Shapiro-Wilk test for normality are shown in Table 13.

	Network_integration	Shapiro-Wilk		
		Statistic	Df	Sig.
Percentage embrace contingencies	Low	,898	6	,363
	High	,918	10	,340

Table 13. Results hypothesis 5 Shapiro-Wilk test for normality

From the sample of student entrepreneurs (n=16) no significant differences are found between a low or high network integration and the use of embracing contingencies (T= ,623, p=.2715). The variances are assumed equally with α= 0,05 (F=2,422, p=.142). This means student entrepreneurs having a lower degree of network integration (M= .03) do not significantly use

the principle of use of alliances and partnerships more than student entrepreneurs having a high degree of network integration (M= .02). Table 14 represents the results from the Independent Samples T-test. Hypothesis 5 is not supported.

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference
Percentage embrace contingencies	Equal variances assumed	2,422	,142	,623	14	,543	,006
	Equal variances not assumed			,546	7,135	,601	,006

Table 14. Results hypothesis 5 Independent Samples T- test

4.6 Covariance

None of the five hypotheses can be supported. It might be possible another variable explains these results because it has an effect on the dependent variable, use of effectuation processes. As discussed in Chapter 3 there will be controlled for gender, age, religion and experience. Because all participants are student entrepreneurs there is also controlled for general reliance on networks in the start-up phase because from the literature that was shown in Chapter 2, it is known that starting entrepreneurs in general might avoid the use of networks in a very early stage (Greve & Salaff, 2003)

To control for these variables a Two Way Between Subjects ANOVA is performed because the Independent Samples T-test does not allow to test for control variables in the program SPSS. The tables from this analysis for each hypothesis can be found in Appendix C. The results indicate that for the first hypothesis none of the control variables has a significant effect on usage of the affordable loss principle. However, usage of the means based principle covaries with sex (p= .005), experience (p= .003), religion (p=.034) and general reliance on networks in the start-up phase (p=.007). In Table 15. these results are shown.

For the third and fourth hypothesis none of the control variables significantly explained the effect from network integration on the use of the creation of the future and use of alliances and partnership hypothesis. The last hypothesis in which was hypothesized that entrepreneurs with a low degree of network integration make more use of embracing contingencies than entrepreneurs with a high degree of network integration some effect was

found. The control variable age scored significantly (p= .042) in the test which means age might be an explanation for making use of embracing contingencies instead of network integration.

Dependent Variable: Percentage means based					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	,096[a]	6	,016	3,845	,042
Intercept	,052	1	,052	12,473	,008
Experience_New	,072	1	,072	17,445	,003
Age_New	,023	1	,023	5,557	,046
Subject_sex	,062	1	,062	14,917	,005
Subject_religion	,027	1	,027	6,493	,034
Extra_Ques_subject _own_comp_q21	,055	1	,055	13,250	,007
Network_integratio nfinal	,000	1	,000	,095	,766
Error	,033	8	,004		
Total	,907	15			
Corrected Total	,129	14			

Table 15. Results of the Two Way ANOVA Between-Subjects Effects

4.7 Overall use of effectuation processes

In this study the student entrepreneurs in total used causation processes (454 times) slightly more than effectuation processes (443 times). Because none of the hypotheses regarding the separate principles of effectuation was supported, the overall use of effectuation processes in comparison with low and high network integration is addressed which gives a final answer to the research question. In order to test this, the variables representing effectuation principles were summed for each problem. The total use of effectuation counted for a sum of the effectuation principles used in each problem. The total text coded was divided by the total amount of effectuation which resulted in a variable representing the percentage of effectuation for the total case. The percentage of effectuation for the total case will be used to perform the Independent Samples T-test. Before performing an Independent Samples T-test the Shapiro-

Wilk test for normality showed the data did not significantly deviated from a normal distribution (Table 16)

	Network_integration	Shapiro-Wilk		
		Statistic	Df	Sig.
Perceff_totalcase	Low	,882	6	,278
	High	,885	10	,147

Table 16. Results Shapiro-Wilk test for normality on overall use of effectuation

The Independent Samples T-test showed that from the sample of student entrepreneurs (n=16) no significant difference is found between a low or high network integration and the use of effectuation processes (T= 1,335, p=.1015). The variances are assumed equally with α= 0,05 (F=3,436, p=.085). This means student entrepreneurs having a high degree of network integration (M= .3827) do not significantly use effectuation processes more than student entrepreneurs having a low degree of network integration (M= .4527). Table 17 represents the results from the Independent Samples T-test.

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower
Perceff_total case	Equal variances assumed	3,436	,085	1,335	14	,203	,06999	,05242	-,04244
	Equal variances not assumed			1,612	13,002	,131	,06999	,04341	-,02380

Table 17. Results of the Independent Samples T-test on the effect of network integration on effectuation processes

In contrast to what was expected, the group of student entrepreneurs with a low degree of network integration made more use of effectuation processes in this study, however the differences are not significant as shown in Table 17.

The Two Way Between Subjects ANOVA is also performed to test whether the control variables influence the relationship between network integration and use of effectuation processes using the percentage effectuation of the total case. The results show that all control variables significantly influence the use of effectuation. In Table 18 the values can be found.

Dependent Variable: Perceff_totalcase

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	,110[a]	6	,018	3,467	,054
Intercept	,130	1	,130	24,522	,001
Experience_New	,075	1	,075	14,098	,006
Age_New	,020	1	,020	3,762	,088
Subject_sex	,049	1	,049	9,176	,016
Subject_religion	,044	1	,044	8,231	,021
Extra_Ques_subject_own_comp_q21	,058	1	,058	11,013	,011
Network_integrationfinal	,003	1	,003	,573	,471
Error	,042	8	,005		
Total	2,742	15			
Corrected Total	,152	14			

Table 18. Results Two Way ANOVA Between-Subjects Effects Percentage Effectuation from the total case

Even though the control variables significantly had an effect on the hypothesized relationship and no significant difference was found for the hypotheses and overall use of effectuation, it

remains interesting to go deeper into the subject and investigate whether there are any significant differences between high and low degree of network integration using effectuation processes per problem. This might provide insights whether or not there are differences in making certain decisions from different problem areas. In order to analyze the ten decision problems separately the variable representing the percentage of effectuation for each problem is computed. This variable was computed dividing the total amount of text by the total amount of effectuation for each problem. The different groups of student entrepreneurs were compared on their high or low degree of network integration. Because a difference is expected the p-values are deviated by two in order to obtain the one-tailed p-value. In problem 7 the group of entrepreneurs having a low degree of network integration (M=.50) significantly (T= 2,192, p=.022) used the effectuation processes more than students with a high degree of network integration (M=.33). A significant relationship was also found in problem 9 with (T= 1,846, p=.0425). In this problem the students entrepreneurs having a low degree of network integration (M=.66) made significantly more use of the effectuation processes than student entrepreneurs having a high degree of network integration (M=.48). In the remaining problems no significant difference was found. In Appendix D a table with details of all the p-values for each problem can be found.

It cannot be claimed that a difference exist between having a high or low degree of network integration and the use of effectuation processes but this analysis per problem shows there is a difference in certain problem areas. However, the significant differences found in two problem areas show that not the group with a high degree of network integration make more use of effectuation processes, but in contrast to what was expected, the group having a low degree of network integration uses the effectuation processes significantly more in these two problem areas. However, this is in line with the results shown in earlier analyses in this chapter.

Chapter 5 Discussion & Conclusion

5.1 Discussion

The results showed that none of the five hypotheses can be supported with empirical evidence. The overall use of effectuation processes is not significantly influenced by network integration. In the first four hypotheses a high degree of network integration was expected to positively influence the use of the affordable loss, means based, creation of the future and alliances and partnership principles. Only in the fifth hypothesis it was hypothesized that a low degree of network integration would result in making more use of embracing contingencies.

In contrast to these expectations, the entrepreneurs having a low degree of network integration used the effectuation processes slightly more than entrepreneurs having a high degree of network integration. Although these differences were found, they are not significant.

The current literature has not met consensus about what network theory consists of and confusion exists (Jack, 2010). Validating and developing measures for the use of alliances and partnerships principle was the aim of Chandler et al. (2011). The developed scale turned out to be relatively weak and thus additional items were added. The new empirical results indicated that the use of alliances and partnerships is present in both causation and effectuation processes. Causators may make use of networks, but they are selecting new members on the base of market predictions (Sarasvathy, 2008). Causators first define the market, then select segments and target before determining which stakeholders they need to acquire (Dew et al., 2009). This indicates causators use the principle as well and both groups have a different approach in using the principle.

Although the five hypotheses derived from the literature could not be supported with empirical evidence, the literature on networks and effectuation is extended with this research. It shows the role of networks in effectuation processes which according the literature exists, is probably more complicated than was expected at first. However, it is important to keep studying networks because entrepreneurs devote quite some time to the development and maintenance of relationships in order to access information (Greve & Salaff, 2003). Effectuation processes were found to be present at expert entrepreneurs (Sarasvathy, 2011). This study showed that novices use effectuation processes as well which is in line with Perry et al. (2011).

5.1.1 Limitations and critics

In this section the limitations and critics of this research and its methodology is discussed. Almost every study is bounded by several limitation which is also the case for this study. The initial goal was to find twenty student entrepreneurs willing to cooperate in this study. However, when arrived in America only ten student entrepreneurs signed up for an interview. In order to reach for more participants emails were send to Berry College's student unions and entrepreneurial associations. Furthermore several locations on campus were visited and presentations were held in classes. The Berry College students were also encouraged by professors to sign up for the interview because they were able to earn extra points when they actually participated. This resulted in a total sample of seventeen student entrepreneurs instead of the twenty which was aimed for. In addition to this, 1 participant was not able to fill out the questionnaire which made it impossible to measure network integration. The total sample used to analyze the findings consisted of sixteen student entrepreneurs. The small sample size may be a limitation here because a mixed method was used. Especially for the quantitative part of the study which measured network integration a sample of sixteen may not be enough to give some clear results on network integration due to possible outliers which may influence the findings (Babbie, 2010).

Although requirements for participating in the interviews were set, some of the participants did not own a business yet, but thought about starting one or had serious plans for it. The fact that these student entrepreneurs could participate in this study was due to the possibility for the entrepreneurs to sign in for the interviews themselves. This was made possible because it was hard to find American student entrepreneurs. As discussed in Chapter 3 this may be a threat to the internal validity. Furthermore, snowball sampling may result in a questionable representativeness of the sample but it can be used in exploratory studies (Babbie, 2010). The possibility exists that not owning a business yet influenced the effectuation processes of these participants.

In this study only novices were under study in order for consistency. However this means the results are not generalizable to expert entrepreneurs. In this study the student entrepreneurs in total used causation processes (454 times) slightly more than effectuation processes (443 times). Although the difference is not very strong, the fact that the participants use causation processes more may be because the participants are novices (Sarasvathy, 2008). In addition, the student entrepreneurs in this study all lived and studied in Rome, Georgia which makes the demographic of the sample a disadvantage for generalizations. Due to the size of the country and its wide variety of cultures the results do not count for all American

student entrepreneurs. However, it was not the aim of this explorative study to make generalizations.

5.1.2 Implications for practice
This study aimed at examining the relationship between the degree of network integration and the use of effectuation processes. Although no relationship was found in this study, entrepreneurs need to be aware of other possible impacts networks may have on their business as discussed in Chapter 2. As shown in the literature review section, networks recently have grown focus. For entrepreneurs it is important to know whether integrating into a network, or deciding not to, impacts the entrepreneurs and their business. The pros and cons of integrating into a network will help the entrepreneur to decide whether to make commitments in certain stages of new venture creation. Furthermore, entrepreneurs need to be aware of differences in the decision making process among entrepreneurs explained in this study with causation and effectuation. This is important because it might provide insight into the decision making process of (potential) partners which may result in facilitating collaboration. Based on the research findings entrepreneurs having a low degree of network integration use effectuation processes significantly more in certain problem areas. More research on effectuation processes and networks is recommended.

5.2 Conclusion
Literature on effectuation that addressed networks was available but limited. The literature which was available indicated a relationship exists between networks and effectuation. The five hypotheses tested in this research were not supported with empirical evidence. This means the answer to the research question '*to what extent does the degree of network integration influences the use of effectuation over causation processes?*' is that network integration does not significantly influences the use of effectuation over causation processes.

Some of the control variables which was tested for using an Two Way Between Subjects ANOVA significantly influenced several effectuation principles. The overall conclusion is that no significant difference exist between groups which are high or low integrated into a network and the use of effectuation processes.

However, the analysis of effectuation principles used in the different problem areas of the case resulted in a significant difference between the groups scoring on effectuation. This means that differences exist in different problem areas. These significant differences contrast the expectations because they indicate the low network integration group used effectuation principles more than the high network integration group in several problem areas.

5.3 Recommendations for future research

For future research on this topic it is recommended to first of all go deeper into the various principles of effectuation. For example the principle of embracing contingencies can be interpreted very broadly and needs more clarification and guidelines. Furthermore, the results indicate networks is a complex concept and in future research more network questions measuring integration can be formulated.

The empirical results of the study of Chandler et al. (2011) indicated the use of networks is present at causators and effectuators. Although networks are present at both groups, they use of it differs. A possibility for future research is to find out how exactly causators and effectuators differ in making use of the networks.

Another idea would be to implement a longitudinal design in testing degree of network integration on effectuation processes. From the literature study was learned networks evolve over time and by asking entrepreneurs to solve decision problems in various moments during the evolvement of the firm one might learn about the network type of the specific moments in time including the frequency of contacts and network content (Greve & Salaff, 2003; Hoang & Antoncic, 2003).

The same study as this one can be held using a bigger sample size and the same country of analysis in order to check whether the findings of this study may not be significant because of the sample size and whether the low network integration group does use effectuation processes more than high network integration entrepreneurs. The differences which were found in several problem areas can also be a focus for future research. Why is it that in some problem areas, entrepreneurs use effectuation processes more than in other problem areas? However which path one chooses in studying networks and the use of effectuation processes, effectuation research is encouraged because of the amount of questions that still can be addressed.

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Appendix A

PROBLEM 1

1: so it says here who could be your potential customers for your coffee corner
2: I would think… that would be anybody at the university like the students teachers ehm
3: maybe the people that visit the university
4: who could be your potential competitors
5: I think of competitors as maybe like.. Starbucks or.. other kind of chain coffee rest ehm coffee shops ehm
6: and it said in the case that there is also coffee available at the university so maybe that .. but if it's not very good then it would not be something I worry about
7: what information would you seek about potential customers and competitors .. list questions you would want to see answered
8: I would think about how much customers would be willing to pay… how much the competitors charge
9: what the customers are looking for if they want coffee.. they want maybe food to go with the coffee ehm
10: maybe when they demand coffee what type of coffee they want
11: as far as competitors maybe what they offer… what you could do to make yourself stand out from your competitors… or put yourself at an advantage
12: how will you find out this information what kind of market research would you do
13: I would start by going to other coffee shops and kind of seeing what they do.. what people like ehm
14: maybe just talking to people at the university and see.. what they would want from the coffee shop and what they would like to see ehm
15: maybe research on the internet which other university coffee shops what they do that makes them stand out
16: what do you think are the growth possibilities for this company
17: I guess you could grow … just as far as on campus maybe having several locations
18: ehm maybe if it's really successful maybe pitching the idea that other.. colleges and .. ehm .. trying to grow it in that way

PROBLEM 2

19: so students staff members and visitors
20: estimated value is 448 million
21: specialized coffees
22: so I guess the main thing that stands out about the price and demands is that students are willing to pay… less than the staff members and visitors
23: so that would be something to keep in mind when setting your prices
24: ehm
25: I guess that makes sense that students are generally on a lower budget than staff members

and probably visitors would be too

26: so I guess the staff members if they have a wider variety of coffee they would be willing to pay more money on

27: and then there is a bonus system .. that you get discount

28: I guess the staff really want to go beyond regular coffee

29: I would think a lot of marketing could be done

30: just direct advertisement since it's gonna be on campus maybe

31: the cinema that could be an expense that… you could avoid

32: the advertisement on cups kind of fit with that

33: you if you don't have a lot of competition .. you will demand a lot of the market and the market will demand your product

34: okay so it says which market segments would you sell your product to

35: ehm

36: can I ask you a question

37: does that mean on campus or like we are going off campus too

Well you have to decide I cannot really say I am sorry

38: I would focus mainly on students and anybody who is kind of related to the university I would think that if it's gonna be … on a college campus you might not really have .. a lot of demand from people that are .. not really frequently on campus they would not .. buy that product ehm

39: so I would.. focus on marketing to just people on campus like its students and visitors and teachers whatever

40: how will I price my product

41: can I go back in this

Yeah of course

42: I would look at a price that's kind of

43: you lose a lot of students between the 75 and a dollar price range so I would try to price it maybe around 75

44: because that way you have a lot demand from students as well as staff and visitors.. once it gets up to a dollar you kind of lose a lot of students and keep the faculty

45: so I would try to keep it around 75 cents to a dollar

46: I guess you could raise the price depending on.. maybe if it's a higher quality product because it said that staff is willing to.. they kind of want a different product with a higher quality so

47: you charge a higher price for a higher quality product and you still have demand from at least the staff

48: how will you sell it to your selected market segment

49: I guess I would just focus on really in the coffee shop

50: seeing what… their demand is for focusing on selling to the .. the people related to the university

PROBLEM 3

51: so I guess they are looking into redesigning the coffee corner to make it kind of more upscale that would make them.. able to raise their price range a little bit maybe

52: and kind of moving towards a more of a Starbucks kind of idea

53: okay

54: so you need 30.000 dollars .. and you don't have cash you can borrow from your

girlfriends parents you can borrow from old friends .. convince your parents to take out a mortgage or convince your employees to wait

55: ehm

56: out of all the options I would be most likely probably to .. borrow from old friends of the university and your student job ehm that's mostly because I feel like most employees don't want to wait that out.. they might but it seems kind of risky ehm

57: I would just honestly feel bad to borrow from the boyfriends parents ..or my parents ehm

58: I guess if you are borrowing you would pay it back but.. I prefer the ask old friends

59: they would be really interested what I am doing and know that I'll pay them back ehm

60: taking out a mortgage on a house kind of seems extreme

61: so I would borrow from old friends I would do that

PROBLEM 4

62: so winning.. competition leads to increase coffee suppliers

63: not really raised the price

64: because if it's a real quality product I need 150.000 dollars to break even

65: but also your sales grow a lot as a result of that

66: so you can work with the venture capitalist that wants 48 percent.. a family friend that's want 33 percent.. and a base salary

67: or continue with internal cash flow and not grow

68: ehm

69: out of the three

70: I would probably choose to work with the friend of the family ehm

71: he has a lot of experience in catering I feel like he could propose a lot to the table as far as helping with the products

72: he only wants 33 percent so you could keep a major.. a majority ownership.. ehm

73: he would invest the money you need

74: but you also have to pay him a salary which is understandable is he is gonna work there I think

75: ehm you like him and respect him that's really the option I would got with

76: If the venture capitalist is also willing to take 33 percent which option would you choose

77: I think if the venture capitalist willing 33 percent I would still choose option number 2.. ehm

78: just because it is somebody who you have a relationship with and they will be able to help you… grow the company and he also has a catering experience

79: even though you talked to pay him a salary I think it would be worth it to have that help and have that relationship in the workplace

PROBLEM 5

80: we won a contract with two coffee suppliers

81: our new staff is meeting new premises

82: we need a one line quote that captures the vision

83: ehm

84: so if I had to choose one of those

85: the one that grabs my attention the most is Starbucks is the past Coffee in is the future.. ehm

86: so I probably choose that one because I think that would be a good attention grabber and kind of really want people to read the article ehm
87: I think it sums up your vision for the company just how you are gonna grow in the future all the other ones are focused on employees or just growing the coffee catering or
88: I think that really sums up everything you are doing and not just one aspect
89: so that's the one I would choose

PROBLEM 6-1

90: the end of the fifth year and you are just breaking even
91: you have steady sales but you are not reaching your growth target… that's interesting
92: so the people who like regular coffee don't want to buy the more expensive drinks
93: and then it sounds like they don't really like it there
94: and those who are primarily interested in the specialized coffees think the regular product downgrades the atmosphere
95: ehm
96: how do you respond to this feedback
97: ehm that's kind of a hard one
98: you could
99: I mean I guess if you wanna keep
100: the interest of.. both of those types of customers you would wanna figure out a way to please both of them or you could
101: decide if you wanted to just offer regular coffee or just offer.. specialized coffee ehm
102: or maybe if you wanted to open another coffee shop one that is specialized and one that is regular
103: I think there is lot of options I think you could look at
104: or maybe try to market the
105: kind of different coffee the more expensive coffees to the regular coffee customers eh
106: maybe offer some kind of specials that they would at least try it and maybe end up liking it
107: and maybe do the opposite for the more expensive coffee drinkers
108: at least try to market it to both sides and then maybe find a happy medium between the two

PROBLEM 6-2

109: so you end up with one regular shop and.. one more exclusive shop
110: exclusive shop has Asian, South America African coffee and variety of teas cakes and pastries
111: so kind of stays more plain in the regular coffee shop even as far as tea.. food.. no books
112: so willing to pay a lot more for.. the exclusive shop which makes me think it's a good idea to do that
113: If you are able to grow it enough
114: and the separate marketing effort
115: so if I had to choose between
116: the completely different concept change or to focus on one of the two concepts ehm
117: I guess I would just go ahead and
118: go on with the concept change

119: seems like if people are willing to pay that much more you kind of already have the mode for the regular coffee shop.. you would be able to focus more attention on developing the new one

120: and there's a lot of money you are gonna have to spend but if it's going to pay back

121: and it seems like it would the customers are really enthusiastic about it I would go ahead and do it

122: so then you have to decide if you want to take the redesign effort in-house

123: outsource it within your home country

124: or outsource it outside your home country

125: I would choose to outsource it… probably within my home country it is kind of in the middle of the three price options

126: and I think that if.. you chose a design company that was within your home country they would have a good idea about what the market wanted and what customers like ehm maybe better than a company outside your home country would

127: I think undertaking it in-house would just add a lot on your plate

128: you try to also run the other coffee shop this one started

129: so I would outsource it within the home country

PROBLEM 7-1

130: okay so now there's two coffee shops

131: the plain coffee and

132: so now you have twenty managers

133: and you are expending yourselves towards the more upscale areas outside the university.. which makes sense ehm

134: okay so the sales team isn't keeping up

135: so they are falling way below where they estimated for their sales ehm

136: would you fire him or hire a new sales manager

137: ehm I would probably hire a new sales manager

138: since it said he dealt with .. regular coffee and he is an excellent salesman

139: maybe I would

140: reassign him to deal with just the regular coffee shop and hire new sales manager.. to head to new coffee shop and the whole sales team

141: ehm

142: in that way Greg has less to focus on.. maybe he can do a better job if he is just with the regular coffee shop

143: will I consult with him I might have him like

144: help me pick the new person or help me hire the new person ehm

145: how would I bring the news to him

146: I would just tell him we are looking for somebody new for the new coffee shop maybe someone that has more experience with the project like that ehm

147: and that we want to move him to deal just with the plain coffee

PROBLEM 7-2

148: okay they wanna get corporate

149: ehm

150: how would I deal with this.. I think

151: they want to keep the entrepreneurial culture alive .. I will try to not go corporate because that kind of gives it that unique feel.. ehm maybe a different atmosphere with the company if you don't go corporate
152: in that way you can still kind of.. make it unique make and it stand out from other coffee shops that are so corporate like Starbucks or.. like Dunkan Donuts or something
153: I would try to not go corporate

PROBLEM 8

154: so in the eight year sales are 27 million ..you have a growth rate of 25 percent a year
155: so the sales started to passing the estimates
156: the board wants to hire professional management
157: so you want to hire a chief operating officer
158: okay so questions I would ask a potential chief operating officer ehm
159: I would ask if they had any kind of experience in the coffee industry any kind of food service.. ehm what they knew about that kind of market
160: ehm how much experience they had in that position in general
161: maybe what they would do to help our growth.. and what they would change in the company if they were giving that position
162: I really want them to give like good solid examples of.. things that they have done and good reasons why they are better than other candidates for that position ehm
163: I would ask where they would wanna see.. Coffee Inc. in the future maybe five or ten years down the road ehm
164: critical issues
165: because I would ask what they would do to promote more sales
166: what they think what would be good new strategies maybe or… new areas to go into
167: how we could improve.. our sales or
168: I guess kind of market share

PROBLEM 9

169: so there's an inner city school.. that wants to work with the company
170: they want developed learning materials for the students
171: it's kind of a big investment
172: both money and time
173: so would you take the initiative for this project
174: I would take the initiative for this project I think at this point ehm… your sales are high enough to kind of justify making that investment ehm
175: it's also gonna be like good for a marketing standpoint that you are helping this inner city school providing this students and teachers with a really good learning experience to get real world study experience in the study program
176: ehm
177: I guess there is a time investment but it seems like other employees are around.. you should be able to handle it
178: so I would definitely take the initiative for this project ehm
179: so I guess I would just donate it
180: that seems like the right thing to do to me

181: I think that if you are in a position that you could give back to the community that is definitely something that you should do so

PROBLEM 10

182: so now you are in the tenth year
183: both companies are growing.. you have three other concepts you earn 45 million in sales and expect 70 million within a year
184: so you can take the company public with an IPO
185: as catering is really booming right now
186: or you can sell to Starbucks
187: I think I would choose direction number one.. and go with the IPO
188: I feel like if I put ten years in this company you have grown it so much I wouldn't want to sell it to Starbucks I would rather do the IPO
189: that gives you an opportunity for growth still as well and you don't give up control
190: although Starbucks is giving me 300 million dollar I feel like
191: me personally I don't want to sell it ehm
192: I would rather do the IPO you still own the majority share
193: eh I think there is just a lot potential from that point on so that's what I would do
So that was the end of the case.. it still have a few more questions
Ehm did you feel ever like stuck in the case because some background information was missing or unclear question
194: just the one question I asked you but besides that I think it's pretty clear
Yeah I was so sorry I could not really explain it
195: that's understandable
Did you think there was enough time to solve the case or did you feel pressure or anything
196: I didn't feel pressure I think it was good I hope I didn't rushed too much
No you did it well
What about the thinking out loud did you had problems with that or did you find it like irritating or
197: I didn't think it was irritating I felt kind of a little bit awkward at first because I am not used to doing that but as I kept doing it started to get easier
Okay and if I would present you the case again would you solve the problem the same or would you make any changes
198: I feel like I would probably do it about the same
Okay so I guess this was the recording part

Appendix B

USA-coding-10-SW
Date: 03 May 2013
Duration: 34.36 minutes

Following the rules of the EPICC coding scheme 02-05-2013 (based on Sarasvathy, 2008, p55)

	Causal	Effectual
Problem 1	2-3: P 1 market segments: students, teachers, visitors 4-5: B 2 competitors: Starbucks, other coffee chains, coffee machines 8-10: P 4 willingness to pay, what are customers looking for, types of coffee, food with their coffee 11: B 5 what do competitors offer, how can you make yourself stand out 16-18: P 8 research on the internet, grow to several locations several campuses	6: E 3 it is not something I worry about 13-15: A 7 go to other coffee shops
Problem 2	22-23: P 9 when setting the prices keep in mind students are willing to pay less than staff members and visitors 28-33: P 11 staff members want to go beyond regular coffee, a lot of marketing is possible, avoid cinema and coffee cups 43: P 13 price around 75 cents 46-47: P 14 you can raise the price depending on the quality of the product	25: M 10 what I know; students are generally on a lower budget 38: C 12 I would focus on students and anyone related to university
Problem 3	51-52: R 15 raise their price range a little bit	56: A 16 I would borrow from old friends of the university 57-59: M 17 who I am; I would feel bad borrowing from the boyfriends parents or my parents, I prefer to ask old friends
Problem 4	64: R 18 I need 150.000 to break even	70-71: M 19 he has a lot of experience and brings a lot

		to the table
		72-73: L 20 he only wants 33% you have the majority ownership
		75-78: M 21 what I know; I would choose option two he is someone you have experience with
		79: L 22 it would be worth it to pay him a salary
Problem 5	88: G 24 it sums up everything you are doing and not just one aspect	85-86: M 23 who I am; the one that grabs my attention the most is number one. What I know; it grabs the attention and makes people want to read the article, it sums of your visions for the future
Problem 6 I	99-108: P 26 you want to please both customers, focus on one or open a new shop, let people try and try to find a happy medium	97: M 25 who I am; that's kind of a hard one
Problem 6 II	117-119: R 27 I will do the concept change because people are willing to spend much more on exclusive drinks 121: P 29 seems like customers are really excited about it 126: K 31 people inside the home country know what the customers want, the culture 127-128: P 32 it will add a lot on your plate you also have another coffee shop to run	120: L 28 It will cost a lot of money but it is going to pay back 125: L 30 it is in the middle of the three price options
Problem 7 I	137-138: P 33 I won't fire him because it said he has been an excellent sales man 142: P 35 maybe he can do a better job 146-147: P 37 I would just tell him we are looking for someone with more experience with the project	140: A 34 hire a new sales manager to head the sales team 143-144: A 36 I will let him help find the new person hire the new person
Problem 7 II	152: B 39 you can still be	151: M 38 it gives you that

	unique and be different than Starbucks and Dunkan Donuts	unique feel in the atmosphere if you don't go corporate
Problem 8	159-168: P 40 questions I would ask in the interview	
Problem 9	177: P 43 you should be able to handle it	171-174: L 41 it's a big investment both money and time wise, your sales are high enough to make that investment 175: C 42 provide students with a learning experience 179-181: M 44 who I am; I would just donate it, seems like the right thing to do and you should give back to the community
Problem 10	189: R 46 it gives you an opportunity for growth and you don't give up control	188: M 45 who I am; I have grown this so much I wouldn't want to sell it to Starbucks 190-191: M 47 personally I don't want to sell to them 193: C 48 there is a lot of potential there

Appendix C

Dependent Variable: Percentage affordable loss					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	,009[a]	6	,001	,692	,664
Intercept	,001	1	,001	,540	,483
Experience_New	,001	1	,001	,272	,616
Age_New	,003	1	,003	1,633	,237
Subject_sex	,001	1	,001	,334	,579
Subject_religion	,002	1	,002	1,044	,337
Extra_Ques_subject_own_comp_q21	,001	1	,001	,673	,436
Network_integrationfinal	,001	1	,001	,249	,631
Error	,016	8	,002		
Total	,109	15			
Corrected Total	,025	14			

Table 19: Results for the control variables on affordable loss

Dependent Variable: Percentage means based					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	,096[a]	6	,016	3,845	,042
Intercept	,052	1	,052	12,473	,008
Experience_New	,072	1	,072	17,445	,003
Age_New	,023	1	,023	5,557	,046
Subject_sex	,062	1	,062	14,917	,005
Subject_religion	,027	1	,027	6,493	,034
Extra_Ques_subject_own_comp_q21	,055	1	,055	13,250	,007
Network_integrationfinal	,000	1	,000	,095	,766
Error	,033	8	,004		
Total	,907	15			
Corrected Total	,129	14			

Table 20: Results for the control variables on means based

Dependent Variable: Percentage creation of the future					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	,004[a]	6	,001	2,650	,102
Intercept	,001	1	,001	2,282	,169
Experience_New	9,100E-005	1	9,100E-005	,386	,552
Age_New	,000	1	,000	2,115	,184
Subject_sex	7,527E-005	1	7,527E-005	,319	,588
Subject_religion	,001	1	,001	4,711	,062
Extra_Ques_subject_own_comp_q21	,000	1	,000	1,042	,337
Network_integrationfinal	8,906E-005	1	8,906E-005	,378	,556
Error	,002	8	,000		
Total	,029	15			
Corrected Total	,006	14			

Table 21: Result for the control variables on creation of the future

Dependent Variable: Percentage use of partnerships					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	,004[a]	6	,001	1,606	,261
Intercept	,001	1	,001	3,686	,091
Experience_New	,000	1	,000	,583	,467
Age_New	4,782E-006	1	4,782E-006	,012	,914
Subject_sex	,000	1	,000	,463	,516
Subject_religion	,001	1	,001	3,402	,102
Extra_Ques_subject_own_comp_q21	3,378E-005	1	3,378E-005	,087	,775
Network_integrationfinal	,001	1	,001	1,452	,263
Error	,003	8	,000		
Total	,041	15			
Corrected Total	,007	14			

Table 22: Result for the control variables on use of alliances and partnerships

Dependent Variable: Percentage embrace contingencies					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	,003[a]	6	,000	1,293	,369
Intercept	,001	1	,001	4,195	,080
Age_new	,002	1	,002	4,744	,066
Experience_final	4,670E-005	1	4,670E-005	,132	,727
Subject_religion	3,224E-005	1	3,224E-005	,091	,771
Subject_sex	,000	1	,000	,885	,378
Extra_Ques_subject_own_comp_q21	,001	1	,001	1,464	,266
Network_integrationfinal	,000	1	,000	1,234	,303
Error	,002	7	,000		
Total	,014	14			
Corrected Total	,005	13			

Table 23: Results for the control variables on embracing contingencies

Appendix D

Problem area	F	t	df	Sig (2-tailed)	Mean difference
P1	.261	.264	15	.398	.015
P2	1,335	-.494	15	.314	-.043
P3	.353	.527	15	.303	.080
P4	.4,713	-.342	13,602	.369	-.033
P5	.045	1,545	15	.072	.180
P6	.112	1,222	14	.121	.116
P7	.693	2,193	15	.022	.172
P8	.650	-1,064	15	.152	-.156
P9	.164	1,846	15	.043	.184
P10	.102	.641	15	.266	.058

Table: 24 Results per problem area