

# **To what extent does the Cultural Dimension of tightness/ looseness of a nation influences the decision-making process of novice entrepreneurs.**

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## **ABSTRACT**

During the industrial age the developed world was characterized by big businesses and mass production. Nowadays, with the world being increasingly globally connected it has given way to a so called entrepreneurial economy, which focuses especially on the service sector, technological advances, demographic shifts and the availability of capital. This has encouraged start-up ventures to challenge conventional wisdom and experiment with new approaches to the market. Consequently, entrepreneurship as a subject has caused an increasing amount of interest and attention among researchers in the last decade. A new concept, namely effectuation was introduced to entrepreneurial literature. When using an effectual approach, the entrepreneurs look for opportunities to employ their actual and limited resources in an uncertain environment and in situation which future is unpredictable. The second angle which has been distinguished with regards to decision-making processes in new ventures, is causation. Causation takes an effect as given and focuses on selecting between means to create that effect. The concepts of effectuation and causation are integral parts of human reasoning that can occur simultaneously, overlapping and intertwining. Entrepreneurs use both models. The purpose of this research is to first investigate the perceived cultural tightness-looseness of the nations and following to measure the influence it has on the use of causal or effectual reasoning. Cultures that are tight, have many strong norms and a low tolerance of deviant behavior versus loose cultures, that have weak social norms and a high tolerance of deviant behavior. This paper aims at contributing to the existing literature and at expanding previous work by gathering and analyzing data from an additional country. Mexico as a Latin American and as a developing country can significantly contribute to further understand how decision making is made by analyzing the perceived influence of a tight or loose cultural perception on entrepreneurial decision making.

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## **Keywords**

Entrepreneurship, novice entrepreneurs, effectual decision-making, causal decision-making, loose cultural dimension, tight cultural dimension, Mexico, Germany, the Netherlands

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# 1. INTRODUCTION

As defined by Stevenson & Jarillo (1990) entrepreneurship is a process by which individuals irrespective of the organizational context recognize opportunities and create organizations to pursue them.

During the industrial age the developed world was characterized by big businesses and mass production. Nowadays it has given way to a so called entrepreneurial economy, which focuses especially on the service sector, technological advances, demographic shifts and the availability of capital. This has encouraged start-up ventures to challenge conventional wisdom and experiment with new approaches to the market (Drucker, 1985).

The economic growth in emerging countries has been driven by a veritable entrepreneurial revolution (Naude, 2011). The necessity to sustain growth and the access to resources, knowledge and the market build potential for innovative entrepreneurship.

In today's knowledge based society, innovation is the driving force of the economy on all levels and in all types of organizations. Due to the high risk present when introducing new products and services, innovations are usually commercialized via startup companies. A startup is a newly formed company, the purpose of which is to develop new, usually innovative products or services in uncertain circumstances (Ries, 2011). Startup entrepreneurship is crucial because its innovative nature brings competitive dynamics and thus makes things more effective (Wiens & Jackson, 2015). Besides it creates new jobs, satisfies new needs and fosters economic growth (Thomas, & Mueller, 2001). Growth is mostly generated by ambitious entrepreneurs who find and realize new business opportunities and thus are the most valuable human resource of every nation.

Due to these developments, the study of entrepreneurship is an evolving subject that increasingly comes to attention of researchers and the society.

Entrepreneurs face the challenge of determining the right approach to achieve their goals and aspirations. Brinckmann, Grichnik and Kapsa (2008) indicate in their research that an intense debate about the value of business planning is emerging. While researchers from the planning school prefer a systematic and prediction-oriented approach and argue that planning is crucial for the survival and development of firms, an opposing group of researchers propose to focus on learning, controlling resources and strategic flexibility.

By introducing the principle of effectuation and causation in 2001, Sara Sarasvathy was one of the scholars who first conducted research regarding this topic. Since 1997 Sarasvathy conducted research among 27 expert entrepreneurs and concluded that most entrepreneurs have a more pragmatic way of thinking. They look for opportunities to employ their actual and limited resources in an uncertain environment and in situation which future is unpredictable. By doing so they involve different stakeholders to ultimately create value for customers. Sarasvathy (2008) named this approach of thinking in a novel and creative way, effectuation. Causation on the other hand is used to predict the future. It takes a particular effect as given and focuses on selecting between means to create that effect.

Sarasvathy (2001) stated that the best entrepreneurs use both models, causal as well as effectual reasoning. However, they prefer effectual reasoning over causal reasoning in the early stages of a new venture, and arguably, most entrepreneurs do not transition well into latter stages requiring more causal reasoning.

In the last decade, the theory of effectuation and causation has gained increasing prominence and it is said to be the most prominent emerging theoretical perspective within entrepreneurship (Fisher, 2012). Multiple research has been conducted to further explore and analyze the topic.

As research by Alsos, Clausen & Solvoll (2014) shows, current scales to measure effectuation crucially lack in matters of their validity. Thus, they subsequently build on the results to develop and validate new measurement scales for causation and effectuation consistent with theory and theoretical predictions (Alsos, Clausen & Solvoll, 2014).

Entrepreneurs are increasingly engaged in solving similar problems and face a similar global business environment and thus may be developing a common entrepreneurial culture around the world (Mitchell, Smith, Seawright and Morse, 2000). Research implies that the national culture has an influence on the decision-making process of entrepreneurs (Shane, 1992; Busenitz, Gomez & Spencer, 2000; Lok & Crawford, 2004). As follows, the national differences can be partly explained by their distinct cultural backgrounds (Brinckman, 2010). The most known researcher who studied the effects of a society's culture on the values of its member was Geert Hofstede. He initially identified four dimensions and later added a fifth and a sixth dimension.

Multiple scholars express concerns regarding Hofstede's work (McSweeney, 2002; Venaik & Paul Brewer, 2013). Mc Sweeney (2002) argues that Hofstede's claims about the role of national culture indicates too much determinism that might be linked to fundamental flaws in his methodology. Venaik and Brewer (2013) show severe problems in Hofstede's research regarding face, discriminant and convergent validity. They argue that to progress, there is a need for greater clarity, precision and congruence across studies in the definition, operationalization and measurement of national culture and its various dimensions. Based on the criticism regarding Hofstede's value based approach, Gelfand (2007) introduces a cultural construct which uses standardized scores to explain cultural differences. It illustrates the difference between cultures that are tight, have many strong norms and a low tolerance of deviant behavior versus loose cultures, that have weak social norms and a high tolerance of deviant behavior (Gelfand et al., 2011).

Consequently, the decision-making approach entrepreneurs use may be influenced by the perceived tightness-looseness of a nation.

This results in the following research question: **'To what extent does the Cultural Dimension of tightness/looseness of a nation influences the decision-making process of novice entrepreneurs?'**

In this research paper, it will first be tested whether the novice entrepreneurs perceive their culture as rather tight or loose and subsequently if they use a more effectual or causal decision making approach. In doing so a questionnaire will

be send to novice entrepreneurs with the aim of a research sample of at least 100 (Hair, 1998; Babin, Money & Samouel, 2003).

The novice entrepreneurs must be working on their first own company and it must be founded no longer than 5 years ago at this point of time. This study is part of a bigger research project. Previous research regarding this topic was conducted by Jose Arturo Morales Corral (2015); Jamie Lee Tjoonk (2016); Jouke Gardien (2017) and Christina Lettau (2016). This paper aims at contributing to the existing literature and at expanding previous work by gathering and analyzing data from an additional country. Mexico as a Latin American and as a developing country can significantly contribute to further understand how decision making is made by analyzing the perceived influence of a tight or loose cultural perception on entrepreneurial decision making. According to the world investment report UNTAD (2017) Mexico scored number 16 on the list of the top 20 host economies in 2015-2016 based on foreign direct investment inflows. On the list for the top prospective host economies for 2017-2019 Mexico scores number 8.

Mexico is becoming more and more interesting for foreign direct investment and thus also for entrepreneurial activities. Understanding how Mexican entrepreneurs make decision and following making comparisons to western countries is crucial.

The novice entrepreneurs from Mexico will be approached through incubators which closely work together with the University Tec de Monterrey.

The research will give an indication of whether novice entrepreneurs prefer a causal or effectual approach while making decisions regarding their business. Following it will determine to what extent the tightness/ looseness of their national culture influences the usage of a causative of effective approach during the decision-making process.

This paper proceeds as followed: First, a theoretical framework will be provided by reviewing existing literature and research critically. Following the hypotheses tested in this paper will be drafted and motivated. This will be followed by an analysis of the outcomes and the limitations of this research.

## **2. Literature and theoretical framework**

### **2.1 Effectuation and causation**

According to Sarasvathy (2001) expert entrepreneurs frame decision problems using an effectual logic. Effectual logic inverts important principles in causal theories of entrepreneurship and strategic management instead of approaching the process in the way taught in business schools; i.e. by identifying opportunities, analyzing, planning and then exploiting the opportunity predicted to be profitable. Effectual framing is about redrawing the problem space and reconstituting existing realities into new opportunities, whereas causal framing involves the discovery and exploitation of existing opportunities within a given problem space (Wiltbank, R., Dew, N., Read, S., Sarasvathy, S.D., R., 2006). Entrepreneurs do not stick to one of the two approaches, both causation and effectuation are integral parts of human reasoning, that can occur simultaneously, overlapping and intertwining over different

contexts of decisions and actions (Dew, Sarasvathy, Read & Wiltbank, 2009).

Causation defines the traditional decision-making perspective of entrepreneurship, which is derived from neo-classical microeconomics (Sarasvathy, 2001; Chandler, DeTienne, McKelvie, & Mumford, 2011). Causal models are goal oriented and begin with an effect to be created. They seek either to select between means to achieve those effects or to create new means to achieve preselected ends (Sarasvathy, 2008). Thus, the model is said to consist of many-to-one (many means, one effect) mappings (Sarasvathy, 2008).

A causal process begins with the identification, recognition or discovery of an opportunity, followed by series of tasks that include (a) developing a business plan based on (b) extensive market research and (c) detailed competitive analyses, followed by (d) the acquisition of resources and stakeholders for implementing the plan, and then (e) adapting to the environment as it changes over time with a view to (f) creating and sustaining a competitive advantage (Read, S. & Sarasvathy, s., 2005/17). After following those steps the decision on which project to pursue is mainly based on the expected return.

Sarasvathy considers the STP (segmentation, targeting and positioning) process as embodied in the procedures outlined in Kotler (1991), a typical causational method. Hereby focus is placed on analysis of external parties which are usually considered as competitors.

The causation theory is as criticized by Sarasvathy only applicable in situations which future is certain and predictable.

Effectual models, in contrast, begin with given means and seek to create new ends using non-predictive strategies. They involve one-to-many (one mean, many effects) mappings. Effectuation as identified by Sarasvathy (2008) comprises five principles namely (1) bird-in-hand; (2) affordable loss; (3) crazy quilt; (4) lemonade; (5) pilot-in-the-plane. It relies on identity, knowledge, and networks to generate potential opportunities (Sarasvathy, 2008; Sarasvathy, Kumar, York, Bhagavatula, 2013).

The Bird-in Hand Principle presumes that a central actor (the entrepreneur) has three categories of means: identity (who I am), knowledge (what I know), and networks (whom I know). With the Affordable-Loss Principle one determines how much one is willing to lose and leveraging limited means in creative ways to generate new ends as well as new means. Effectual models emphasize alliances and commitments from stakeholders as a way to reduce and/or eliminate uncertainty. Contingencies and uncertainties are perceived as an opportunity to exercise control of the emerging situation. Focus is thus said to be on the controllable aspects of an unpredictable future.

Table 1: Combining causation and effectuation

Dimension	Causation model	Effectuation model
<b>Approach</b>	Goal oriented	Means oriented
<b>Selection criteria</b>	Expected return	Affordable loss
<b>Attitude towards others</b>	Competitive Analyses	Strategic Alliances
<b>Predisposition towards contingencies</b>	Avoid contingencies	Leverage contingencies
<b>View of the future</b>	Forecast	Design
<b>Underlying logic</b>	Predicting uncertain future	Control unpredictable future

## 2.2 Tight and loose cultures

In the past research has mainly focused on internal values and ‘person’ variables to explain cross cultural differences. The sole reliance on values for understanding cultural differences has been questioned on empirical as well as theoretical grounds as it is said to leave at least half of the ‘cultural picture’ unexplained (Gelfand, M. J., Nishii, L. H. & Raver, J. L., 2007)

Early scholars like Pelto (1968) already recognized that new perspectives are needed and that social norms, constraints and sanctioning are crucial components of the social normative context. Pelto (1968) was the first to suggest that tightness–looseness is an important cultural dimension that could be relevant for comparing different societies. He tried to pinpoint the sociocultural features that would define a society as tight or loose which are namely, the communal ownership of economic resources, the corporate of kin groups and the community hierarchy of religious and civil authority.

The theory of tightness-looseness was then further elaborated by Triandis (1989), according to whom tightness–looseness is one of the three cultural syndromes (the other two being individualism–collectivism and complexity). Tightness looseness as defined by Triandis is a pattern of shared attitudes, beliefs, categorizations, self-definitions, norms, role definitions and values. They are organized around a theme that can be identified among those who speak a particular language and live together in a given historical period in a given geographical region.

The dimension of tightness-looseness is said to be related to Hofstede’s cultural dimension of individualism-collectivism but as later researched by Carpenter (2000) they are clearly distinguishable (Realo, Linnamägi & Gelfand, 2014).

Gelfand (2006) continued the research and created a multilevel model of societal tightness-looseness, where tightness–looseness is part of a complex, loosely integrated system that involves processes across multiple levels of analysis. As one can see in Appendix (A1) the three levels of analysis are, namely the Societal level, the Organizational level and the Individual level. The model explains the influence of tightness/looseness on those levels, how they correlate and enforce each other (Gelfand, Nishii, & Raver, 2006).

Tight cultures are more restrictive, with stricter disciplinary measures for norm violations while loose cultures have weaker social norms and a higher tolerance for deviant behavior. The antecedents of tightness-looseness were found to be specific ecocultural and historical factors such as population density, food deprivation, human disease or territorial threats. Societies facing those factors consequently developed strong norms and a low tolerance for deviant behavior to maintain order within their cultures and to survive threats Gelfand (2006, 2011).

Gelfand, Nishii and Raver propose that societal institutions in tight societies promote narrow socialization in that they have more constraint and highly developed systems of monitoring. Loose societies in contrast have lower constraint and weakly developed systems of monitoring and sanctioning behavior. Educational institution, media and criminal justice reinforce broad or narrow socialization. Tight cultures for example typically have more pervasive educational practices and demand strict obedience. That entails that citizen from a tight culture typically prefer an adaptive decision making style.

Tight societies have strict social norms and clear rules. Due to severe disciplinary measures for norm violations and due to a high cognitive accessibility of normative requirements, individuals in tight societies predominantly conform with those norms. Loose cultures in contrast have weak social norms and a high tolerance for deviant behavior. Due to Gelfand (2011) this encourages a more deviant behavior and an innovative mind.

Finally, individuals in tight nations are better able to monitor themselves compared to individuals from a loose nation.

Table 2: Comparison tight and loose cultures.

	Tight cultures	Loose cultures
<b>Socialization</b>	Narrow	Broad
<b>Preferred Decision-making style</b>	Adaptor (Prevention focus)	Innovator (Risk seeking)
<b>Societal norms</b>	Normative restrictiveness (Strict disciplinary measures for norm violations) ➡ Conform to norms	Weak social norms (High tolerance for deviant behavior) ➡ Deviate from norms
<b>Structure</b>	High need for structure	Low need for structure
<b>Self- monitoring</b>	Higher self-monitoring ability (Impulse control)	Lower self-monitoring ability (Instincts)

## 2.3 Hypotheses

The concepts of effectuation and causation are integral parts of human reasoning that can occur simultaneously, overlapping and intertwining (Dew, Sarasvathy, Read, & Wiltbank, 2009). Thus it is important to point out that the same person can use both causal and effectual reasoning at different times depending on what the circumstances call for. However, most entrepreneurs have a clear preference of one approach over the other.

In her research Gelfand et al. (2011) rated 33 nations by means of their tightness/ looseness. On her score 1 corresponds to 'the loosest' and 10 corresponds to 'the tightest'. According to Gelfand et al. (2011) with a score of 3.3 the Netherlands can be described as a loose nation. Thus, they have weak social norms and a high tolerance of deviant behavior. Germany is rated as a tight society with a mean score of 7. Mexico is rated not significantly higher with a score of 7.2. Accordingly, both countries have strong norms with a low tolerance of deviant behavior. Following it would be interesting to determine whether the subjects of this study perceive their nation according to the research of Gelfand et al. (2011). Gelfand states that in each nation they surveyed individuals from a wide range of occupations, as well as university students. The percentage of students in Mexico was 40.3%, in Germany 50.45% and in the Netherlands 53.1%. The subjects of our study have all been students, many of them especially in Mexico very recently. Besides, the mean ages of the sample researched by Gelfand and the sample in this study differ. This and the fact that Gelfand's study was conducted in 2011 leads to the need to research whether our sample perceives their nation differently from what Gelfand's study states.

Cultures and their values change, even though very slowly. A study of Mandel & Realo (2015) in Estonia suggests that tightness-looseness, similarly to cultural value orientations, is a relatively stable and robust characteristic of culture but change indeed takes place, but slowly.

As Mexico is a developing country, there are reasonable grounds to assume that it changes faster. The GDP per capita PPP percentage increase of Mexico is significantly higher than the one of Germany and the Netherlands. Economic changes foster societal changes.

This leads to the following hypotheses.

*H1: Novice Entrepreneurs from Germany perceive their culture as rather tight.*

*H2: Novice Entrepreneurs in the Netherlands perceive their culture as rather loose.*

*H3: Novice Entrepreneurs from Mexico perceive their culture as rather tight.*

After determining how the entrepreneurs perceive their nation, the relationship between Sarasvathy's concept of tightness-looseness of a nation and Gelfand's concept of causation-effectuation will be explored. According to Gelfand (2011) loose societies are more innovative and risk seeking. They have a low need for structure and are thus more inclined to make free decisions. The concept of effectuation has similar characteristics, as it seeks to leverage from contingencies and leaves the subject with more freedom of determining the future for example. Accordingly, it is to expect that entrepreneurs coming from a loose society use a more effectual than causal decision

making approach. This leads to the following set of hypotheses.

*H4o: Novice entrepreneurs coming from a loose society do not tend to use more effectual decision making.*

*H4A: Novice Entrepreneurs coming from a loose society tend to use more effectual decision making*

Opposing to that, the theory of societal tightness-looseness states that in tight societies there is more need for control (Gelfand, 2011). There are clear norms and rules according to which citizen must behave. This leads to an education system which is more pervasive and demands strict obedience. Those characteristics coincide with a causal decision making style. Therefore, it is to expect that novice entrepreneurs coming from a tight society tend to use more causal decision making. This leads to the following set of hypotheses.

*H5o: Novice Entrepreneurs coming from a tight society do not tend to use more causal decision making.*

*H5A: Novice Entrepreneurs coming from a tight society tend to use more causal decision making.*

## 3. Methodology

In order to answer the research questions of this paper, data of novice entrepreneurs from the Netherlands, Germany and Mexico was gathered by using a quantitative research method and standardized measures to assign numbers to observations and statistics to summarize the results.

In a first step the samples from the three nations were combined ( $n = 47+76+66$ ) in order to conduct an exploratory factor analysis. In doing so the sampling approach by Mitchell et al (2000) was followed. The factor analysis requires a Kaiser-Meyer-Olkin of ( $>0.7$ ) and a Bartlett's test of Sphericity with a significance of ( $<.05$ ). To explore and identify patterns in the collected survey data a pattern matrix was created. When deciding the numbers of factors to extract from the survey data the Kaiser criterion was used. With an eigenvalue of 1 and a suppression point of 0.3, two factors (effectuation and causation) needed to be outlined. Subsequently the hypotheses were tested by taking each sample separately  $n=47$ ,  $n=76$ ,  $n=66$  in order to compare nations with each other. The research was conducted in an exploratory manner and theory building in nature since it involves measures and constructs which are comparatively new to the literature. Following an analysis of variance ANOVA was made to explore and compare the differences among group means. It is considered the appropriate analytic tool for testing theory, especially at an early stage when research questions are more concerned with the existence of relationships than with their strength (Pedhazur & Schmelkin, 1991). For all analyses a p-value of ( $<.05$ ) and a Cronbach's alpha of ( $>.7$ ) was required (Field, 2013).

There are three requirements which the entrepreneurs need to fulfill in order to be included in the data used for this research. Firstly, to prevent any cultural influences from other countries, the entrepreneurs must have the nationality of the nation they operate in and which we aim to measure. Secondly, they must have acquired a higher educational degree (BA, MA, PHD). Thirdly, they need to be 'novice', meaning that it must be the first business they founded and it cannot exist longer than five years up to this point in time.

Novice entrepreneurs were selected since they do not have much experience in doing business and thus are still more influenced by causal decision making. Entrepreneurs which are doing business for many years most likely use an effective approach, due to their reliance on their experience. As researched by Sarasvathy (2008), about 90 percent of expert Entrepreneurs prefer an effectual over a causal approach. In that case causation would hardly be measurable.

### 3.1 Data collection

The survey was created via Google Forms and the original questionnaire designed by Alsos (2014) was translated from English into Spanish, German and Dutch. This step was necessary to prevent confusion and measurement errors resulting from language misunderstandings. The survey for the Mexican sample was accordingly translated by a Spanish native speaker and employee of the ITESM and has been checked by additional native speakers.

The data from the Mexican sample was gathered in the following way.

The survey was first sent via Email to Mexican entrepreneurs. The Mexican entrepreneurs were approached via a startup incubator attached to the Monterrey Institute of Technology and Higher Education (ITESM) campus in Querétaro, Mexico and through personal contacts. Due to the fact, that sending the questionnaire via Email did not result in a satisfying amount of answers, the Entrepreneurs were following approached in a more direct manner. First, we visited the incubator attached to the campus of the university Tec de Monterrey and reached out to the entrepreneurs personally in order to conduct the survey on the spot. This led to about 50 answered questionnaires. Subsequently two events were attended, of which one 'la Cueva de los lobos' (shark tank) was about young entrepreneurs pitching their businesses, business ideas to a jury to obtain investment. The second event took place at the university campus and young entrepreneurs were honored for their efforts. In addition, the survey was published in a private group of Mexican entrepreneurs on a social media platform (Facebook). This led to a total of 106 answers, of which after consideration of the above-mentioned selection criteria, 66 were usable. Due to the direct manner, in which the subjects were approached, a quite high percentage of the data (61.32%) was expedient. Before inviting the entrepreneurs to voluntarily fill in the survey, it was assured that main characteristics of the subjects fit the requirements of the survey.

### 3.2 Data Sample

In this section, the data sample of the study is outlined to present the attributes of the survey participants. Out of the 106 Mexican entrepreneurs who filled out the survey, 29 of the responses could not be used for the study, leaving 66 responses to conduct the research. The distribution of male and female responders is almost equal. 36 of the entrepreneurs were male, while 31 of the entrepreneurs were female. The average age of the entrepreneurs is 24,39 years, the youngest one being 21 and the oldest one 39. Among the sample, 35,82% of the entrepreneurs had no parents who were entrepreneurs, 34,33% had one parent who was an entrepreneur and 22,39 % indicated that both parents were entrepreneurs. The entrepreneurs of this sample have their

business in different industries, some of them being service industries like marketing, education, health and communication. Other industry fields are Information Technology, food industry and textile industry. The majority of the sample population (23,88%), indicated that they founded their company to follow a dream. The average time here since the company was founded is 1,39 years. Concerning the educational background, only 37,31% have a degree related to business studies. However, 85,07 % absolved a course with a focus on entrepreneurship. 65 respondents have a bachelor's degree, one respondent has a diploma and one respondent has a master's degree. Most of the respondents do not know the term effectuation, only 10,44% have heard of the term and 11,94 % know the term effectuation.

To be able to compare tight and loose nations, two datasets of the Netherlands and Germany were added. The data was gathered by Tjoonk (2016), Cieslik (2016) and other students being part of this bigger project. The data was gathered in a similar way and the surveys coincide which makes the datasets comparable. The added datasets consist of data from 47 German entrepreneurs and 76 Dutch entrepreneurs. The average age of the German sample is 29.9 and the Dutch average is 41.8. The sample of all three countries thus have a considerable difference in their average age.

### 3.3 Measurement of concepts

The survey consists of 54 questions of which seven are optional as they concern confidential financial data of the firms. It aims at measuring multiple approaches and collecting related personal data of the participants. The questionnaire is thus composed of different variables from the previously revised literature. Due to the fact, that the research conducted is part of a bigger project, not all tested concepts are relevant for this paper. The first 10 questions which measure the cognitive style of participants (Epstein, 1996) are not relevant for this research. However, all other measured concepts are relevant.

Question 11 to 20 measure the concept of *effectuation and causation*. The scale was created and validated by Alsos (2014) and measures 5 principles of effectuation and 5 principles of causation as suggested by Sarasvathy and colleagues (Dew et al., 2008; Sarasvathy, 2001; Wiltbank, Dew, Read, & Sarasvathy, 2006). Question 21 to 26 measure the tightness and looseness of a nation (Gelfand et al., 2011). *Effectuation and causation* are as mentioned before dichotomous concepts. Alsos, Clausen & Solvoll (2014) argue that current scales are hampered with important validity problems. They lack discriminant and construct validity (Chandler et al., 2011; da Costa & Brettel), as well as internal consistency reliability (Brettel et al., 2012; Chandler et al., 2011). Based on those findings and emerging from the construction and application of current scales and the validity assessments of Chandler et al. (2011), Alsos, Clausen & Solvoll (2014) developed a new scale. After extensive validation, the scale showed a satisfying testing construct, discriminant, criterion validity, as well as internal consistency reliability.

The concepts of *tightness-looseness* measure the societal background of the novice entrepreneurs. Gelfand, Nishii and

Raver (2006) developed a scale which contains 6 questions to measure the social values and norms of a society. All remaining questions either aim at gathering basic personal data like age and gender or they ask more specific question regarding educational background or financial data. Some of them will serve as control variables to ensure that other variables do not influence the relative relationship between other variables. In order to answer question 1 to 26 the subjects could choose from a likert scale (Likert, 1932) which ranges from 1 (entirely agree) to 7 (entirely disagree). The analysis of the data was conducted via SPSS Version 24.

### 3.4 Item- and reliability analysis

#### 3.4.1 Dependent Variable: Causation

The causation scale has a Cronbach's alpha of 0.71 and thus shows a sufficiently high covariance. The  $\alpha$  coefficient of reliability can range from 0 (no covariance) to 1 (perfect covariance). The higher the alpha, the more the items have shared covariance and probably measure the same underlying concept. The statistic shows that one item has a correlation of 0.266 and thus undercuts the often-used lower limit of selectivity of 0.30. Since the consistency is overall sufficient and the item is considered as important, it remains in the scale. Apart from that the optimization of a scale according to statistical aspects of reliability analysis can lead to a loss of psychometric validity.

#### 3.4.2 Dependent Variable: Effectuation

The effectuation scale has a Cronbach's alpha of  $\alpha=0.69$  and it can therefore be concluded that the scale measures the same underlying concept. Since all items have a selectivity of above 0.3 no modification of the scale is necessary.

#### 3.4.3 Independent Variables Tightness/Looseness

The Gelfand-scale shows a Cronbach's alpha of 0.449. By definition, an alpha of  $>0.7$  is usually required in research for a scale to be redeemed reliable. When taking a closer look at the selectivity it comes to attention that Gelfand\_4 negatively correlates with the overall scale. The correlation of the item Gelfand\_4 is  $-0.125$ . As deleting the item, would still lead to an unsatisfying Cronbach's alpha of 0.611 and as we do not wish to alter the scale, the item stays in the scale. Additionally, lower alphas are generally accepted when scales are based on few items and when research is exploratory (Gabrielsson & Politis, 2011), which is the case in this research. In addition, the measurement of a relatively broad principle like the one of tightness-looseness will generally produce scales with a lower alpha compared to narrowly measured concepts.

### 3.5 Exploratory factor analysis

Following, an exploratory factor analysis was conducted. This was done to ensure for content validity since the survey was previously translated into Spanish, Dutch and German. For the purpose of this, the datasets of Germany, the Netherlands and Mexico were merged.

#### *Effectuation and causation*

An exploratory factor analysis was conducted in order to identify the structure of the relationship between the variables of the effectuation and causation scale and its validity. Before that a Kaiser-Meyer-Olkin test (KMO) and

a Bartlett's test of Sphericity were conducted to test how suited the data is for the factor analysis.

The KMO measures the sampling adequacy for each variable and requires a value above 0.7 (Loewen, Shawn, and Talip Gonulal, 2015). As the Kaiser-Meyer-Olkin scored a 0.789 ( $>0.7$ ), which is by definition of Kaiser 'good' and significant there is no need to take remedial action. The Bartlett's test shows a significant deviation of the empirical correlation matrix from the unit matrix, meaning that there are sufficient correlations between the items that differ significantly from zero and themselves.

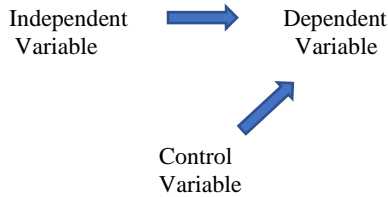
Both tests are significant and therefore the data is suitable for a factor analysis. Following the communalities were calculated in order to check the item reliability. Communality is the proportion of common variance within a variable. After extraction the communalities are rather low ranging from 0.125 to 0.536. Two factors have an Eigenvalue of above one and are thus extracted. They can explain 36.08% of the total variance in the items. When an Eigenvalue is less than 1.0 the factor explains less information than a single item would have explained and thus is not sufficiently justified keeping that factor (Loewen, Shawn, and Talip Gonulal, 2015).

The scree plot (where Eigenvalues are plotted against the number of factors) shows that two factors have an Eigenvalue greater than one and the pattern matrix reveals that one item (Effectuation\_5) has a negative factor of over 3.

### 3.6 Control Variables

Control variables are unchanged throughout the course of the investigation and must be determined to clarify the relative relationship between the dependent and independent variable. They ensure that other variables do not influence the relative relationship between other variables and prevent that wrong conclusions are drawn. The control variables of age, gender, the study in which the entrepreneurs successfully graduated and whether the parents are entrepreneurs are chosen, since those factors are expected to possibly have an influence on the other variables which are intended to be measured. When taking a closer look at the control variables 'age' it comes to attention that the control variable of age should be excluded since there is not enough data available.

A one-way ANOVA analysis was conducted in order to reveal possible influences of the control variables on effectual and causal decision making. As causation and effectuation are not mutually exclusive two tests were conducted. The results (A.8.1 & A.8.2.) show no significant influence of the control variables on effectuation nor causation ( $p > 0.005$ ). This leads to the conclusion that any likelihood of influence of the control variables can be discarded.



## 4. Results

### Hypothesis 1 to 3

*H1: Novice Entrepreneurs from Germany perceive their culture as rather tight.*

*H2: Novice Entrepreneurs from the Netherlands perceive their culture as rather loose.*

*H3: Novice Entrepreneurs from Mexico perceive their culture as rather tight.*

A Levene's test of homogeneity of variances was conducted first, in order to assess the equality of variances for the different nations. The Levene's test shows that there is a significant deviation ( $p=0.00$ ) of the assumption of homogenous variances. This means that the variance in the groups is not similar enough to be considered of the same kind. Thus, they are inhomogeneous. As a post-hoc test a Games-Howell-Test will be conducted since this test is in general even robust when you have inhomogeneity (Shingala, 2015). The Games-Howell-Test shows no significant differences when comparing the nations in pairs. The  $p$ -values ranges from 0.91 to 0.983 and are thus all not significant. Additionally, a one-way analysis of variance (ANOVA) was conducted in order to compare and to determine whether there are any statistically significant differences between the means of tightness-looseness of the three nations. The ANOVA test as well shows that there is no significant difference between the nations ( $p=0.931 > .05$ ). As one can see in the scree plot and in the table in A.7.1, the mean of Mean\_Gelfand of all three nations ranges between 4.15 and 4.2 (Germany: 4.1525), (Netherlands: 4.1689), (Mexico: 4.1976) and is thus not significantly different. Since the Gelfand-scale ranges from 1 (loosest) to 6 (tightest), all nations consider themselves as rather tight. Therefore, H1 and H3 can be declared as true. Novice entrepreneurs from Germany and Mexico perceive their culture as rather tight. H2 on the other hand is not true since novice entrepreneurs from the Netherlands do not perceive their culture as rather loose.

A Shapiro-Wilk test was conducted in order to test whether the population is normally distributed. A  $p$ -value of  $<0.05$  indicates that there is enough evidence to assume that the population and the mean of the Gelfand-scale is not normally distributed. Germany (0.108) and Mexico (0.182) have a value above  $p=0.05$  and are thus according to the Shapiro-Wilk test normally distributed. The Shapiro-Wilk test for the Netherlands indicates that the mean of the Gelfand scale is not normally distributed (0.00).

### Hypotheses 4

*H4o: Novice entrepreneurs coming from a loose society do not tend to use more effectual decision making.*

*H4A: Novice Entrepreneurs coming from a loose society tend to use more effectual decision making.*

As there were no significant differences between the nations in their tightness/looseness and all samples perceived their nation as rather tight, the hypothesis cannot be researched as such. Instead the differences in the means\_effectuation between the nations will be researched.

A Levene's test of homogeneity of variances was conducted in order to assess the equality of variances for the different nations. The Levene's test shows that there is no significant deviation ( $p=0.293$ ) of the assumption of homogenous variances. The following conducted one factor ANOVA test shows that there are significant ( $p=0.004$ ) differences between the groups. As a post hoc comparison the GT2-test of Hochberg and a Games Howell-test were conducted. Those tests are especially useful when sample sizes are different (Germany  $n=47$ ), (Netherlands  $n=76$ ) and (Mexico  $n=66$ ). According to Field (2000) the GT2 test of Hochberg can become unreliable when the variances of the samples differ, which is not the case as previously determined. Both tests show statistical significant higher values for effectuation for the Netherlands. (Hochberg:  $p=.005$ , Games-Howell:  $p=.004$ )

As one can see in the scree plot in A.7.2, Mexico and Germany do not differ significantly in their mean effectuation (Germany=3.8, Mexico=3.7). The Netherlands on the other hand do differ significantly from Mexico and vice versa. The Netherlands have a mean\_effectuation of 4.3.

As the scale of effectuation ranges from one to six, where six indicates an intense use of effectual decision making. Thus, Germany and Mexico have a slight preference towards effectual decision making. The Netherlands have a more distinct preference.

### Hypotheses 5

*H5o: Novice Entrepreneurs coming from a tight society do not tend to use more causal decision making.*

*H5A: Novice Entrepreneurs coming from a tight society tend to use more causal decision making.*

As there could not be found any significant differences between the nations in their tightness/looseness and all samples perceived their nation as rather tight, the same applies to hypothesis 5. Following the differences in the means of causation between the different nations will be researched. The Levene's test of homogeneity of variances was conducted to assess the equality of variances for the different nations. The Levene's test shows that there is no significant deviation ( $p=0.563$ ) of the assumption of homogenous variances. Subsequently a one factor ANOVA test was conducted in order to test whether there are statistical significant differences between the nations. The test shows significant differences between the groups ( $p=0.000$ ). As sample are not equal in their size, the GT2-test of Hochberg and a Games Howell-test were conducted as post hoc comparisons. Both tests show a significant



difference in mean causation between all nations. The Hochberg-test shows that Germany and the Netherlands differ with a significance of (0.00), the Netherlands and Mexico differ with a significance of (0.00) and Germany and Mexico differ with a significance of (0.032).

Accordingly, the sample from Mexico makes decision in a very causal manner (mean=5.1), the German sample uses causal decision making as well (mean=4.6). The Dutch sample has a mean of 3.7 and thus makes the least use of the causal approach.

## 5. Discussion

This research was aimed at giving further insights in the decision-making process of novice entrepreneurs and how the cultural dimension of tightness-looseness influences causal and effectual decision making. The focus hereby was on the Latin - American country, Mexico and the comparison with the western European countries, the Netherlands and Germany.

When contacting entrepreneurs that could participate in the survey we first experienced difficulties in gathering sufficient data. By sending the survey via Email we did not get enough responses. Following the entrepreneurs were approached in a more direct manner by addressing them at their workplace or at events for entrepreneurs particularly. This indeed helped getting more responses as we could exert some pressure. However, the survey contains over 50 questions and many participants were in a hurry while answering.

This might have led to questions answered unthoughtfully or frivolously. For example, question 4 of Gelfand negatively correlated in our research with the overall scale. As this was the only question of Gelfand poled opposing to the other question, the entrepreneurs might have misread that question.

The low Cronbach's alpha of  $\alpha=0.449$  is mainly due to this. After item deletion, the Cronbach's alpha would be 0.611. And thus, not above the minimum of  $>.7$  as usually required for a scale to be redeemed reliable. This can be caused by the lack of items asked (Weng, 2004) but as already mentioned above, lower alphas are generally accepted when scales are based on few items and when research is exploratory (Gabrielsson & Politis, 2011). The Cronbach's alpha for effectuation and causation are above or close to 0.7 and thus satisfying.

The statement, that the concepts of effectuation and causation are integral parts of human reasoning that can occur simultaneously, overlapping and intertwining (Dew, Sarasvathy, Read, & Wiltbank, 2009), can be confirmed in this research. All three nations showed a slight or more distinct preference towards effectuation and causation. Meaning that they are not opposing concepts.

The factor analysis for effectuation-causation show a satisfying Kaiser-Meyer-Olkin Measure of sampling adequacy and a Bartlett's Test of Sphericity. The communalities, which show the proportion of common variance within a variable, are rather low after extraction ranging from 0.125 to 0.536. Variables with low

communalities (less than .20 so that 80% is unique variance) are usually eliminated from the analysis since the aim of factor analysis is to try and explain the variance through the common factors (Child, 2006). For one item this would be the case. The total variance explained is 36,075 and thus low as well meaning that the items are not sufficient to explain the model. In social science, a solution that accounts for 60% of the total variance and in some instances less is considered as satisfactory (Hair, 2014).

The control variables in this research of age, gender, the study in which the entrepreneurs successfully graduated and whether the parents are entrepreneurs are chosen, show no significant influence on effectuation nor causation ( $p>0.005$ ). This leads to the conclusion that any likelihood of influence of the control variables can be discarded.

The fact that there was no significance found could be due to the lack of data. Especially in the case of the control variable 'age'.

## 5.1 Hypothesis outcome

### Hypothesis 1-3:

*H1: Novice Entrepreneurs from Germany perceive their culture as rather tight.*

*H2: Novice Entrepreneurs from the Netherlands perceive their culture as rather loose.*

*H3: Novice Entrepreneurs from Mexico perceive their culture as rather tight*

H1 and H3 can be declared as true. Novice entrepreneurs from Germany and Mexico perceive their culture as rather tight. H2 on the other hand is not true, since novice entrepreneurs from the Netherlands do not perceive their culture as rather loose in this research.

The one-way analysis of variance (ANOVA) as well as the Games-Howell-test showed that there is no significant difference in tightness-looseness between Mexico, the Netherlands and Germany. The samples from all three countries perceive their nation as rather tight which is in the case of Germany and Mexico according to Gelfand et al. (2011). The Netherlands on the other hand scored a 3.3, which can be according to Gelfand (2011) be described as a rather loose nation.

The Gelfand-scale in this research shows a Cronbach's alpha of  $\alpha=0.449$  which is under 0.7 and therefore too low. This could lead to unreliable outcomes and following be a reason for different outcomes compared to Gelfand et al. (2011).

Another explanation might be that the mean age of the sample from the Netherlands in this research is 42 years and the mean age of the Dutch sample Gelfand used was 30. Following, the Shapiro-Wilk test for the Netherlands indicates that the mean of the Gelfand-scale is not normally distributed (0.00), which could lead to unreliable results as well. As there is not sufficient data available the influence of the age on the cultural tightness-looseness could not be tested.

#### **Hypotheses 4:**

*H4o: Novice entrepreneurs coming from a loose society do not tend to use more effectual decision making.*

*H4a: Novice Entrepreneurs coming from a loose society tend to use more effectual decision making.*

As there were no significant differences between the nations in their tightness-looseness and all samples perceived their nation as rather tight, the hypothesis could not be researched as such. Following the differences between the nations regarding their use of effectual decision making were tested and there was indeed a difference. Mexico and Germany have a slight preference for effectual decision making. The Netherlands have a more distinct preference.

Nevertheless, when classifying the nations according to Gelfand (2011), the alternative hypothesis can be declared as true.

The Netherlands as a 'loose' nation has a stronger preference towards effectual decision making in comparison to Mexico and Germany, which are rather tight nations.

#### **Hypotheses 5:**

*H5o: Novice Entrepreneurs coming from a tight society do not tend to use more causal decision making.*

*H5a: Novice Entrepreneurs coming from a tight society tend to use more causal decision making.*

When considering the scores given by Gelfand (2011), the alternative hypothesis can be declared as true. Accordingly, the sample from Mexico makes decisions in a very causal manner (mean=5.1), the German sample uses causal decision making as well (mean=4.6). The Dutch sample has a mean of 3.7 and thus makes the least use of the causal approach. Following, Entrepreneurs coming from a rather tight society like Germany or Mexico do tend to use more causal decision making than a rather loose nation, like the Netherlands.

#### **5.2 Conclusion**

Measurement is part and parcel of theoretical development. Without measurement, research cannot examine how theoretical concepts are related to each other, and it will be impossible to verify theories or to empirically explore the boundaries of theoretical systems and to accumulate knowledge to guide human action (Alsos, Clausen, Sovoll, 2014)

To conclude, the research question of this paper was: 'To what extent does the Cultural Dimension of tightness/looseness of a nation influences the decision-making process of novice entrepreneurs.' The research failed to depict a difference between the nations in their tightness-looseness. This could be due to unreliable data, as the Cronbach's alpha of tightness-looseness was not satisfying. The Dutch entrepreneurs perceive their society as rather tight, which is opposing to the research by Gelfand (2011). Nevertheless, when taking the scores of Gelfand (2011) as given, there indeed is a difference between rather tight and loose nations regarding their preference in the usage of effectuation or causation. However, to what extent the cultural dimension of tightness-looseness of a nation influences the decision-making process of novice entrepreneurs, cannot be concluded from this research. More data would be required at this point.

#### **5.3 Scientific and practical relevance**

This research contributes to the development of effectuation research and adds to its literature by using quantitative research methods. Further researching the theory of effectuation, to move it from its current exploratory scope is crucial, to identify testable elements of entrepreneurship which are teachable.

Entrepreneurship was traditionally perceived as an individual characteristic but in recent years scholars proposed that it is a form of expertise – a set of skills, models and processes that can be acquired with time and practice (Sarasvathy, 2005). Future education in the field of entrepreneurship and future success of entrepreneurs, relies on scholars discovering more testable elements. Developing learning approaches can have a significant added value for future entrepreneurs.

Beyond that this research provides more knowledge about whether Mexicans entrepreneurs perceive their culture as rather tight or loose and how Mexican entrepreneurs make decisions regarding their businesses. Mexico as a country is especially interesting in this context due to its attractiveness for foreign direct investments. Through this research one becomes insights into the decision-making processes of Mexican entrepreneurs what could help to evaluate and grasp business coherences and make smart business decision as a foreign investor.

#### **6. Recommendations for further research and Limitations**

This research has some limitations. The first one, is the limited validity due to the relatively small sample size. The German sample consisted of 47 answers, the Dutch one of 76 and the Mexican one of 66 participants. From small samples, a conclusion can be drawn but outcomes can hardly be generalized. In this research, the small sample became especially an issue when checking for influence of the control variables.

As mentioned before, the amount of questions in the survey could also be a limitation, as the survey contains over 50 questions and some participants might not have the patience to read and answer all question carefully.

According to Read, Sarasvathy, Dew, Wiltbank (2017) interesting new directions for developing effectuation theory can be revealed by considering how, and to what extent, the core constructs, relationships, and processes of effectuation theory can be extended to collectivities such as founding teams and organizations. Intertwined in collective effectual processes, the decision-making style on an individual and organizational level differ and vary across different contexts. They thereby highlight the limited attention directed to date beyond the level of the individual.

At this point is to mention, that scholars have developed scales to be able to measure effectuation and causation both as individual behavior (Chandler, DeTienne, McKelvie, & Mumford, 2011) and as a corporate orientation (Brettel, Mauer, Engelen, Kuepper, 2012).

The scale used in this research Alsos (2014) takes a behavioral approach focusing on the actions taken by entrepreneurs to develop new firms.

Accordingly, it might be interesting to further extend the research on effectuation on an organizational level and to explore how the individual and organizational level differ.

According to Sarasvathy (2001) Entrepreneurs prefer effectual reasoning over causal reasoning in the early stages of a new venture, and arguably, most entrepreneurs do not transition well into latter stages requiring more causal reasoning. In her research from 2008, Gelfand states, that about 90 percent of expert Entrepreneurs prefer an effectual over a causal approach. This leads to the assumption that this research was a good example for novice entrepreneurs but the outcomes might not be transferable to more experienced entrepreneurs. Following it would be interesting to compare a sample of expert entrepreneurs with a sample of novice entrepreneurs to assess what influence this has on the decision-making style or use of an effectual approach.

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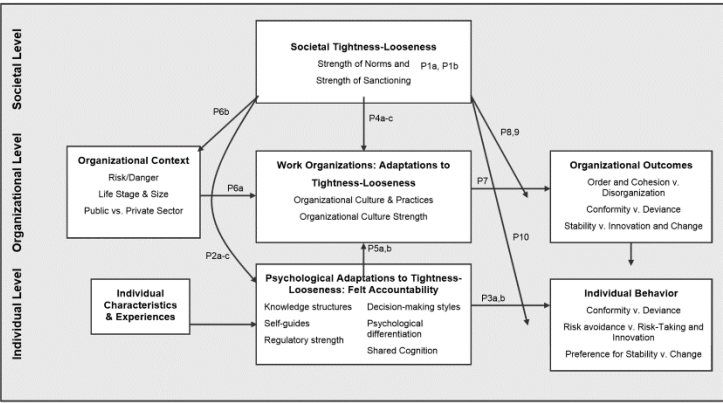
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9. Appendix

A.1



A.2

Table 12.1 Principles of effectuation

Issue	Effectual principle
View of the future	<i>Design</i> The future is contingent on actions by willful agents.
Givens	<i>Means</i> provide the basis for decisions and new opportunities; three subconstructs: <ul style="list-style-type: none"><li>– Who I am</li><li>– What I know</li><li>– Whom I know</li></ul>
Attitude toward others	<i>Partnership</i> Build <i>your</i> market together with customers, suppliers and even prospective competitors.
Predisposition toward risk	<i>Affordable loss</i> Calculate downside potential and risk no more than you can afford to lose.
Predisposition toward contingencies	<i>Leverage contingencies</i> Surprises can be positive. Leverage them into new opportunities.
Basis for commitment	<i>Can</i> Do what you are able to do – based on imagination and satisficing.
Underlying logic	To the extent we can control the future, we don't need to predict it.

A.3

TABLE 1  
Contrasting Causation and Effectuation

Categories of Differentiation	Causation Processes	Effectuation Processes
Givens	Effect is given	Only some means or tools are given
Decision-making selection criteria	Help choose between means to achieve the given effect Selection criteria based on expected return Effect dependent: Choice of means is driven by characteristics of the effect the decision maker wants to create and his or her knowledge of possible means	Help choose between possible effects that can be created with given means Selection criteria based on affordable loss or acceptable risk Actor dependent: Given specific means, choice of effect is driven by characteristics of the actor and his or her ability to discover and use contingencies
Competencies employed	Excellent at exploiting knowledge	Excellent at exploiting contingencies
Context of relevance	More ubiquitous in nature More useful in static, linear, and independent environments	More ubiquitous in human action Explicit assumption of dynamic, nonlinear, and ecological environments
Nature of unknowns	Focus on the predictable aspects of an uncertain future	Focus on the controllable aspects of an unpredictable future
Underlying logic	To the extent we can predict future, we can control it	To the extent we can control future, we do not need to predict it
Outcomes	Market share in existent markets through competitive strategies	New markets created through alliances and other cooperative strategies

#### A4.1 Item- and reliability analysis

##### Causation:

Reliability Statistics	
Cronbach's Alpha	N of Items
,710	5

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Caus_1	17,026	25,390	,485	,656
Caus_2	17,214	23,038	,586	,612
Caus_3	18,947	28,436	,266	,736
Caus_4	17,873	24,080	,452	,669
Caus_5	17,860	22,513	,562	,620

#### A4.2 Item- and reliability analysis

##### Effectuation:

Reliability Statistics	
Cronbach's Alpha	N of Items
,688	5

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Eff_1	15.746	24.935	,526	,599
Eff_2	15.241	27.762	,401	,655
Eff_3	15.439	25.373	,514	,605
Eff_4	15.476	28.732	,380	,663
Eff_5	15.854	26.815	,393	,661

### A4.3 Item- and reliability analysis

Tightness/looseness:

Reliability Statistics	
Cronbach's Alpha	N of Items
,449	6

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Gelfand_1	20,37	11,385	,281	,371
Gelfand_2	20,93	10,734	,270	,373
Gelfand_3	20,71	10,756	,376	,316
Gelfand_4REV	21,57	14,331	-,125	,611
Gelfand_5	20,66	11,251	,331	,346
Gelfand_6	21,01	11,189	,325	,347

AFTER ITEM DELETION

Reliability Statistics	
Cronbach's Alpha	N of Items
,611	5

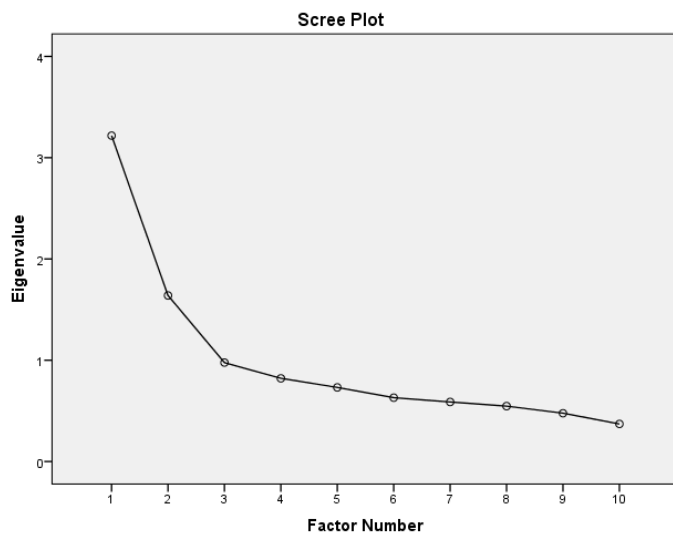
### A5: Exploratory Factor analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,789
Bartlett's Test of Sphericity	Approx. Chi-Square	404,004
	df	45
	Sig.	,000

Communalities		
	Initial	Extraction
Caus_1	,340	,387
Caus_2	,421	,512
Caus_3	,115	,125
Caus_4	,285	,291
Caus_5	,437	,536
Eff_1	,341	,444
Eff_2	,220	,298
Eff_3	,289	,395
Eff_4	,186	,243
Eff_5	,314	,375

Total Variance Explained							
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings <sup>a</sup>
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	3,218	32,176	32,176	2,631	26,305	26,305	2,377
2	1,639	16,394	48,570	,977	9,769	36,075	1,989
3	,977	9,766	58,336				
4	,821	8,214	66,550				
5	,732	7,315	73,866				
6	,630	6,305	80,170				
7	,588	5,881	86,051				
8	,547	5,471	91,522				
9	,477	4,769	96,291				
10	,371	3,709	100,000				
Extraction Method: Principal Axis Factoring.							
a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.							

Pattern Matrix <sup>a</sup>		
	Factor	
	1	2
Caus_1	,592	
Caus_2	,772	
Caus_3	,402	
Caus_4	,549	
Caus_5	,685	
Eff_1		,642
Eff_2		,603
Eff_3		,583
Eff_4		,547
Eff_5	-,395	,316
Extraction Method: Principal Axis Factoring.		
Rotation Method: Promax with Kaiser		
Normalization: <sup>a</sup>		
a. Rotation converged in 3 iterations.		





## A.6.1 DESCRIPTIVES GERMANY

Descriptives

			Statistic	Std. Error	Bootstrap <sup>a</sup>		
					Bias	Std. Error	95% Confidence Interval Lower Upper
Mean_Causation	Mean		4,6213	,15002	,0050	,1545	4,3161 4,9183
	95% Confidence Interval for Mean	Lower Bound	4,3193				
		Upper Bound	4,9233				
	5% Trimmed Mean		4,6695		,0031	,1555	4,3545 4,9662
	Median		4,8000		,0431	,2126	4,4000 5,2000
	Variance		1,058		-,025	,252	,623 1,623
	Std. Deviation		1,02849		-,01956	,12237	,78938 1,27401
	Minimum		1,40				
	Maximum		6,40				
	Range		5,00				
	Interquartile Range		1,20		,16	,30	,95 2,00
	Skewness		-,853	,347	,072	,369	-1,476 -,086
	Kurtosis		,747	,681	-,284	1,117	-1,077 2,936
Mean_Effectuation	Mean		3,7106	,19118	-,0010	,1935	3,3225 4,0971
	95% Confidence Interval for Mean	Lower Bound	3,3258				
		Upper Bound	4,0955				
	5% Trimmed Mean		3,7199		-,0032	,2084	3,3054 4,1316
	Median		3,6000		,0845	,3041	3,2000 4,4000
	Variance		1,718		-,025	,288	1,148 2,294
	Std. Deviation		1,31070		-,01452	,11135	1,07125 1,51471
	Minimum		1,20				
	Maximum		6,20				
	Range		5,00				
	Interquartile Range		1,80		,02	,30	1,35 2,50
	Skewness		-,039	,347	,012	,224	-,449 ,425
	Kurtosis		-,572	,681	,026	,317	-1,089 ,164
Mean_Gelfand	Mean		4,1525	,05264	,0029	,0531	4,0504 4,2623
	95% Confidence Interval for Mean	Lower Bound	4,0465				
		Upper Bound	4,2584				
	5% Trimmed Mean		4,1483		,0042	,0526	4,0494 4,2553
	Median		4,1667		,0108	,0786	4,0000 4,3333
	Variance		,130		-,003	,028	,079 ,188
	Std. Deviation		,36087		-,00708	,03963	,28029 ,43347
	Minimum		3,33				
	Maximum		5,17				
	Range		1,83				
	Interquartile Range		,50		-,05	,10	,33 ,67
	Skewness		,114	,347	-,065	,380	-,671 ,768
	Kurtosis		,508	,681	-,185	,663	-,816 1,760

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Mean_Causation	,133	47	,037	,947	47	,033
Mean_Effectuation	,071	47	,200 <sup>*</sup>	,975	47	,413
Mean_Gelfand	,117	47	,108	,974	47	,364

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

## A.6.2 DESCRIPTIVES

### NETHERLANDS

**Descriptives**

			Statistic	Std. Error	Bootstrap <sup>a</sup>		
					Bias	Std. Error	95% Confidence Interval Lower Upper
Mean_Causation	Mean		3,7421	,12452	-,0055	,1289	3,4895 3,9941
	95% Confidence Interval for Mean	Lower Bound Upper Bound	3,4940 3,9902				
	5% Trimmed Mean		3,7421		-,0037	,1319	3,4760 3,9995
	Median		3,8000		-,0477	,1362	3,4000 4,0000
	Variance		1,178		-,012	,189	,786 1,533
	Std. Deviation		1,08557		-,00911	,08839	,88668 1,23798
	Minimum		1,00				
	Maximum		6,20				
	Range		5,20				
	Interquartile Range		1,35		,01	,21	1,00 1,80
	Skewness		-,045	,276	,000	,234	-,504 ,439
	Kurtosis		,079	,545	-,025	,366	-,581 ,884
Mean_Effectuation	Mean		4,2474	,12847	,0044	,1317	3,9842 4,5176
	95% Confidence Interval for Mean	Lower Bound Upper Bound	3,9915 4,5033				
	5% Trimmed Mean		4,2696		,0022	,1364	3,9929 4,5357
	Median		4,4000		-,0535	,1687	4,0000 4,6000
	Variance		1,254		-,028	,186	,900 1,608
	Std. Deviation		1,11994		-,01577	,08364	,94872 1,26824
	Minimum		1,00				
	Maximum		6,60				
	Range		5,60				
	Interquartile Range		1,75		-,04	,26	1,20 2,20
	Skewness		-,329	,276	,028	,241	-,796 ,155
	Kurtosis		-,356	,545	-,066	,514	-1,192 ,680
Mean_Gelfand	Mean		4,1689	,07522	-,0012	,0751	4,0163 4,3070
	95% Confidence Interval for Mean	Lower Bound Upper Bound	4,0190 4,3187				
	5% Trimmed Mean		4,1823		-,0032	,0775	4,0241 4,3235
	Median		4,3333		-,0228	,1106	4,0000 4,5000
	Variance		,430		-,008	,069	,300 ,572
	Std. Deviation		,65574		-,00810	,05323	,54737 ,75616
	Minimum		2,67				
	Maximum		6,00				
	Range		3,33				
	Interquartile Range		1,00		-,06	,13	,67 1,17
	Skewness		-,320	,276	-,012	,293	-,890 ,229
	Kurtosis		-,055	,545	-,045	,506	-1,001 ,930

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Mean_Causation	,075	76	,200 <sup>*</sup>	,987	76	,655
Mean_Effectuation	,081	76	,200 <sup>*</sup>	,975	76	,129
Mean_Gelfand	,152	76	,000	,960	76	,017

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

## A.6.3 DESCRIPTIVES

### MEXICO

Descriptives

			Statistic	Std. Error	Bootstrap <sup>a</sup>		
					Bias	Std. Error	95% Confidence Interval Lower Upper
Mean_Causation	Mean		5,1318	,12149	-,0062	,1263	4,8776 5,3743
	95% Confidence Interval for Mean	Lower Bound Upper Bound	4,8892 5,3745				
	5% Trimmed Mean		5,1677		-,0108	,1260	4,9052 5,3979
	Median		5,2000		-,0981	,1455	4,9000 5,2000
	Variance		,974		-,019	,192	,596 1,340
	Std. Deviation		,98702		-,01447	,09875	,77202 1,15746
	Minimum		2,20				
	Maximum		7,00				
	Range		4,80				
	Interquartile Range		1,20		-,12	,20	,60 1,50
	Skewness		-,458	,295	,064	,326	-,928 ,368
	Kurtosis		,990	,582	-,096	,660	-,321 2,420
Mean_Effectuation	Mean		3,6000	,15374	-,0013	,1518	3,2983 3,8720
	95% Confidence Interval for Mean	Lower Bound Upper Bound	3,2930 3,9070				
	5% Trimmed Mean		3,6172		-,0018	,1613	3,2978 3,9100
	Median		3,5500		,0668	,3188	3,1000 4,0000
	Variance		1,560		-,028	,191	1,168 1,944
	Std. Deviation		1,24900		-,01360	,07730	1,08097 1,39419
	Minimum		1,00				
	Maximum		5,80				
	Range		4,80				
	Interquartile Range		1,80		,25	,29	1,50 2,70
	Skewness		-,152	,295	,015	,193	-,542 ,238
	Kurtosis		-,958	,582	,002	,224	-1,346 -,459
Mean_Gelfand	Mean		4,1976	,09695	,0019	,0991	3,9924 4,3853
	95% Confidence Interval for Mean	Lower Bound Upper Bound	4,0040 4,3912				
	5% Trimmed Mean		4,1976		,0052	,1039	3,9897 4,3994
	Median		4,3333		-,0648	,1189	4,0208 4,5417
	Variance		,620		-,006	,103	,425 ,822
	Std. Deviation		,78760		-,00643	,06567	,65212 ,90664
	Minimum		2,25				
	Maximum		5,79				
	Range		3,54				
	Interquartile Range		1,04		,00	,19	,68 1,46
	Skewness		-,181	,295	,005	,223	-,673 ,250
	Kurtosis		-,175	,582	-,014	,404	-,808 ,757

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Mean_Causation	,128	66	,009	,956	66	,021
Mean_Effectuation	,107	66	,061	,963	66	,045
Mean_Gelfand	,099	66	,182	,980	66	,349

a. Lilliefors Significance Correction

## A7.1 HYPOTHESES 1-3:

Test of Homogeneity of Variances			
Mean_Gelfand			
Levene Statistic	df1	df2	Sig.
11,592	2	186	,000

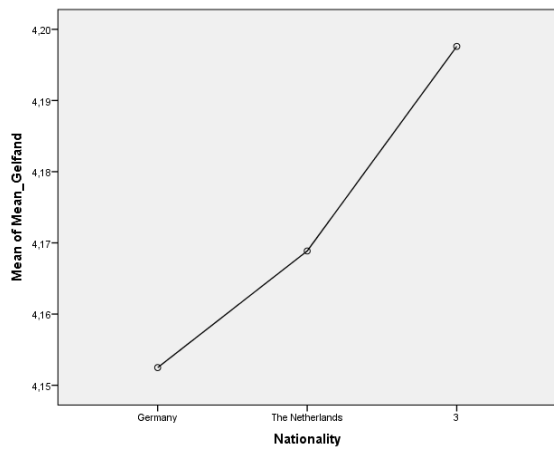
ANOVA					
Mean_Gelfand					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,060	2	,030	,072	,931
Within Groups	78,561	186	,422		
Total	78,621	188			

Multiple Comparisons							
Dependent Variable: Mean_Gelfand							
	(I) Nationality	(J) Nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Hochberg	Germany	The Netherlands	-,01638	,12060	,999	-,3069	,2741
		Mexico	-,04512	,12404	,977	-,3439	,2537
	The Netherlands	Germany	,01638	,12060	,999	-,2741	,3069
		Mexico	-,02874	,10935	,991	-,2921	,2346
	Mexico	Germany	,04512	,12404	,977	-,2537	,3439
		The Netherlands	,02874	,10935	,991	-,2346	,2921
Games-Howell	Germany	The Netherlands	-,01638	,09181	,983	-,2343	,2015
		Mexico	-,04512	,11032	,912	-,3077	,2175
	The Netherlands	Germany	,01638	,09181	,983	-,2015	,2343
		Mexico	-,02874	,12271	,970	-,3197	,2623
	Mexico	Germany	,04512	,11032	,912	-,2175	,3077
		The Netherlands	,02874	,12271	,970	-,2623	,3197

### Report

Mean\_Gelfand

Nationality	Mean	N	Std. Deviation
Germany	4.1525	47	,36087
The Netherlands	4.1689	76	,65574
Mexico	4.1976	66	,78760
Total	4.1748	189	,64668



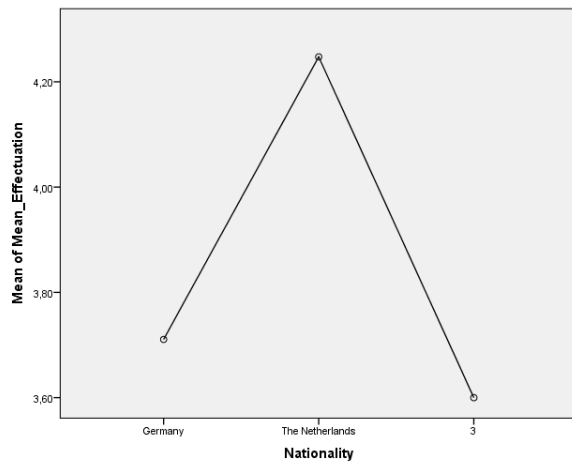
## A7.2 Hypothesis 4:

Test of Homogeneity of Variances			
Mean_Effectuation			
Levene Statistic	df1	df2	Sig.
1,235	2	186	,293

ANOVA					
Mean_Effectuation					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16,768	2	8,384	5,681	,004
Within Groups	274,494	186	1,476		
Total	291,262	188			

Multiple Comparisons							
Dependent Variable: Mean_Effectuation							
	(I) Nationality	(J) Nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Hochberg	Germany	The Netherlands	-,53673	,22543	,054	-,10797	,0063
		Mexico	,11064	,23186	,951	-,4478	,6691
	The Netherlands	Germany	,53673	,22543	,054	-,0063	1,0797
		Mexico	,64737 <sup>*</sup>	,20440	,005	,1550	1,1397
	Mexico	Germany	-,11064	,23186	,951	-,6691	,4478
		The Netherlands	-,64737 <sup>*</sup>	,20440	,005	-,11397	-,1550
Games-Howell	Germany	The Netherlands	-,53673	,23034	,057	-,10861	,0126
		Mexico	,11064	,24533	,894	-,4734	,6947
	The Netherlands	Germany	,53673	,23034	,057	-,0126	1,0861
		Mexico	,64737 <sup>*</sup>	,20035	,004	,1724	1,1223
	Mexico	Germany	-,11064	,24533	,894	-,6947	,4734
		The Netherlands	-,64737 <sup>*</sup>	,20035	,004	-,11223	-,1724

\*. The mean difference is significant at the 0.05 level.



Mean_Effectuation			
	Nationality	N	Subset for alpha = 0.05
			1
Hochberg <sup>a,b</sup>	Mexico	66	3,7102
	Germany	47	3,8457
	The Netherlands	76	4,2566
	Sig.		,058

### A7.3 Hypothesis 5:

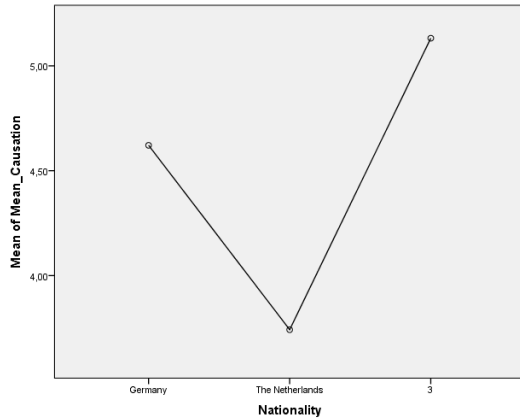
Test of Homogeneity of Variances			
Mean_Causation			
Levene Statistic	df1	df2	Sig.
,577	2	186	,563

ANOVA					
Mean_Causation					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	70,142	2	35,071	32,556	,000
Within Groups	200,367	186	1,077		
Total	270,510	188			

Multiple Comparisons							
Dependent Variable: Mean_Causation							
	(I) Nationality	(J) Nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Hochberg	Germany	The Netherlands	,87917 <sup>*</sup>	,19260	,000	,4153	1,3431
		Mexico	-,51054 <sup>*</sup>	,19810	,032	-,9877	-,0334
	The Netherlands	Germany	-,87917 <sup>*</sup>	,19260	,000	-1,3431	-,4153
		Mexico	-1,38971 <sup>*</sup>	,17463	,000	-1,8103	-,9691
	3	Germany	,51054 <sup>*</sup>	,19810	,032	,0334	,9877
		The Netherlands	1,38971 <sup>*</sup>	,17463	,000	,9691	1,8103
Games-Howell	Germany	The Netherlands	,87917 <sup>*</sup>	,19497	,000	,4154	1,3429
		Mexico	-,51054 <sup>*</sup>	,19305	,026	-,9701	-,0510
	The Netherlands	Germany	-,87917 <sup>*</sup>	,19497	,000	-1,3429	-,4154
		Mexico	-,51054 <sup>*</sup>	,19305	,026	-,9701	-,0510

	3	Mexico	-1,38971 <sup>*</sup>	,17397	,000	-1,8018	-,9776
		Germany	,51054 <sup>*</sup>	,19305	,026	,0510	,9701
		The Netherlands	1,38971 <sup>*</sup>	,17397	,000	,9776	1,8018

\*. The mean difference is significant at the 0.05 level.



Mean_Causation			
	Nationality	N	Subset for alpha = 0.05
			1
Hochberg <sup>a,b</sup>	The Netherlands	76	3,7421
	Germany	47	4,6213
	Mexico	66	5,1318
	Sig.		1,000

## A.8.1 Control variables: Effectuation

Model Summary<sup>c</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,285 <sup>a</sup>	,081	-,006	1,31489	,081	,927	4	42	,458	1,851
2	,393 <sup>b</sup>	,154	,051	1,27661	,073	3,557	1	41	,066	

a. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study

b. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study, Mean\_Gelfand\_incl\_rev\_4

c. Dependent Variable: Mean\_Effectuation

ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,410	4	1,602	,927	,458 <sup>b</sup>
	Residual	72,615	42	1,729		
	Total	79,025	46			
2	Regression	12,206	5	2,441	1,498	,212 <sup>c</sup>
	Residual	66,819	41	1,630		
	Total	79,025	46			

a. Dependent Variable: Mean\_Effectuation

b. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study

c. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study, Mean\_Gelfand\_incl\_rev\_4

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4,404	,418		10,529	,000	3,560	5,248		
	DUMMY_gender	-,482	,407	-,184	-1,185	,243	-1,303	,339	,909	1,100
	DUMMY_bus_admi_study	-,562	,417	-,208	-1,350	,184	-1,403	,278	,918	1,089
	Parents_entrepreneur=One of them	-,383	,468	-,125	-,819	,418	-1,326	,561	,939	1,066
	Parents_entrepreneur=Both	-,369	,648	-,088	-,570	,572	-1,677	,938	,922	1,084
2	(Constant)	,238	2,246		,106	,916	-4,298	4,774		
	DUMMY_gender	-,545	,396	-,208	-1,375	,177	-1,346	,256	,903	1,108
	DUMMY_bus_admi_study	-,485	,406	-,180	-1,193	,240	-1,306	,336	,909	1,100
	Parents_entrepreneur=One of them	-,359	,454	-,117	-,790	,434	-1,276	,558	,938	1,066
	Parents_entrepreneur=Both	-,421	,629	-,100	-,668	,508	-1,692	,851	,921	1,086
	Mean_Gelfand_incl_rev_4	,998	,529	,275	1,886	,066	-,071	2,066	,972	1,029

a. Dependent Variable: Mean\_Effectuation

## A.8.1 Control variables: Causation

Model Summary<sup>c</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,414 <sup>a</sup>	,171	,092	,97981	,171	2,171	4	42	,089	1,436
2	,450 <sup>b</sup>	,203	,105	,97276	,031	1,611	1	41	,212	

a. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study

b. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study, Mean\_Gelfand\_incl\_rev\_4

c. Dependent Variable: Mean\_Causation



ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8,338	4	2,084	2,171	,089 <sup>b</sup>
	Residual	40,321	42	,960		
	Total	48,659	46			
2	Regression	9,862	5	1,972	2,084	,087 <sup>c</sup>
	Residual	38,797	41	,946		
	Total	48,659	46			

a. Dependent Variable: Mean\_Causation

b. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study

c. Predictors: (Constant), Parents\_entrepreneur=Both, DUMMY\_gender, Parents\_entrepreneur=One of them, DUMMY\_bus\_admi\_study, Mean\_Gelfand\_incl\_rev\_4

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4,004	,312		12,849	,000	3,375	4,633		
	DUMMY_gender	-,002	,303	-,001	-,007	,994	-,614	,610	,909	1,100
	DUMMY_bus_admi_study	,833	,310	,393	2,684	,010	,207	1,459	,918	1,089
	Parents_entrepreneur=One of them	,340	,348	,141	,975	,335	-,364	1,043	,939	1,066
	Parents_entrepreneur=Both	,064	,483	,019	,132	,895	-,910	1,038	,922	1,084
2	(Constant)	1,868	1,711		1,092	,281	-1,588	5,324		
	DUMMY_gender	-,034	,302	-,017	-,114	,910	-,644	,576	,903	1,108
	DUMMY_bus_admi_study	,873	,310	,412	2,817	,007	,247	1,498	,909	1,100
	Parents_entrepreneur=One of them	,352	,346	,146	1,017	,315	-,347	1,051	,938	1,066
	Parents_entrepreneur=Both	,038	,480	,011	,079	,938	-,931	1,006	,921	1,086
	Mean_Gelfand_incl_rev_4	,512	,403	,180	1,269	,212	-,303	1,326	,972	1,029

a. Dependent Variable: Mean\_Causation

## A 9. Correlation

### Correlations

		Mean_Causation	Mean_Effectuation	Mean_Gelfand_incl_rev_4
Mean_Causation	Pearson Correlation	1	-,356**	,084
	Sig. (2-tailed)		,000	,357
	N	189	189	123
Mean_Effectuation	Pearson Correlation	-,356**	1	,155
	Sig. (2-tailed)	,000		,086
	N	189	189	123
Mean_Gelfand_incl_rev_4	Pearson Correlation	,084	,155	1
	Sig. (2-tailed)	,357	,086	
	N	123	123	123

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### Descriptive Statistics

	Mean	Std. Deviation	N
Mean_Causation	4,4460	1,19953	189
Mean_Effectuation	3,8878	1,24470	189
Mean_Gelfand_incl_rev_4	4,1626	,55992	123