

The influence of cultural tightness-looseness and innovativeness on effectuation and causation-based new venture creation decisions: a moderated mediation model

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Abstract This study has built on existing literature by examining the influence of cultural tightness and innovativeness on both effectuation and causation-based new venture creation decisions in a moderated mediation model. To examine this, we conducted research on novice entrepreneurs in the United States of America. Using data collected from 109 novice entrepreneurs, we found significantly higher use of causation than effectuation. Our results indicated that both cultural tightness and innovativeness positively and significantly affect the use of causation while they do not have an influence on effectuation. Moreover, cultural tightness fully mediates the effect of innovativeness on causation while innovativeness partially mediates the effect of cultural tightness on causation. These findings add to the diversity of effectuation literature by empirically testing the antecedent variables cultural tightness and innovativeness while the findings also add evidence to the development of a reliable and valid measurement scale for effectuation and causation. Overall, the results of the study indicate that it seems impossible to describe the whole complexity of the effectuation and causation-based new venture creation decision based on innovativeness and cultural tightness-looseness and that one should be careful with generalizing these results. Therefore, we call for cross-country research on the use of effectuation and causation-based decision and the antecedent variables innovativeness and cultural tightness, and a continued hunt for unmeasured antecedent variables of effectuation and causation in order to develop it into an actual theory.

Keywords: national culture, cultural tightness, innovativeness, new venture creation decision, entrepreneurship, effectuation, causation

Preface

“I never really thought in terms of the concept of being a rock star. Being around people like that just seemed like normal day-in-the-life stuff to me. Those were just the surroundings I grew up in”. – Anthony Kiedis (Red Hot Chili Peppers)

For me, this quote is highly recognizable for both the topic of this thesis and my personal development before and during the process of writing this thesis. When I started my student career, I made the choice to study Business Administration based on the assumption of people close to me that it would be a good fit for me, and with a goal to obtain a well-paid job. Following this big decision, I gathered more life experience and learned that I should not have to stay in my current surroundings if I feel that it endangers my core values of learning, discovering and doing new things. I made a switch from goal-oriented decision-making to means-oriented decision-making in which my core values are a starting point. Following this switch in mindset, I broke loose from the perceived attitudes of others towards decisions that may deviate from their perspective of what is the right thing to do. These decisions may not have led to a career as a rock star, but it did lead to me consciously choosing the, for me highly interesting, research topic of this thesis and an adventurous journey through the United States of America to collect relevant data. Learning processes, like writing this thesis and collecting data, have been important in this process of self-development and self-discovery. This thesis concludes my Master of Science in Business Administration, with a specialization in Entrepreneurship, Innovation and Strategy, at the University of Twente in Enschede, The Netherlands, but the road continues, with more to be learned, and more experiences to gain and share with loved ones.

I want to express my sincere gratitude to my first supervisor Dr. Martin Stienstra for guiding me through this process of iterative learning. I am grateful for the sound feedback and help that you’ve given me during my theory building and data collecting going on all the way to my graduation. I also want to thank my second supervisor A. Priante for her useful feedback in the later stage of my thesis writing process.

One of the biggest challenges when writing this thesis was the collection of enough valuable data. I had the luck that during my travels through the USA, I was accompanied by a classmate, researcher and friend, Kervin Krommendijk. He has been a tremendous help during my data collection, and I can truly say that we’ve shared the work-load and complemented each other, which resulted in a satisfactory data set and an invaluable life experience. However, we could have never managed to succeed in collecting enough data without the tremendous help of the American entrepreneurship community. In particular, I want to thank Mike Grimshaw, Clinton Day and Paula Englis for their hospitality, guidance and tireless efforts to get us in touch with entrepreneurs. Without you, we would not have succeeded in collecting valuable data from the USA. I will never forget the help that you have given me, and I will try to transfer this kindness and entrepreneurial spirit towards my surroundings, wherever that will be in the future.

I want to express my thanks to the 155 entrepreneurs that took the time and effort to participate in my research and enriched me with their knowledge and personalities. I have been especially impressed by the time that several of these entrepreneurs took to sit down with me and have a talk about broader topics in entrepreneurship than only those included in the survey. These conversations helped me tremendously in developing alternative ideas and explanations for theories that are applied in this research. Last, but not least, I sincerely would like to thank my family, friends and partner for their unconditional support and encouragement. I can confirm from first-hand experience that a supportive environment is crucial for succeeding in writing this thesis.

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1. Introduction

The decision to start a business is perhaps one of the most impactful decisions that an individual will face in his professional career. The new venture creation decision is typically described as a complex and multidimensional phenomenon (Gartner, 1985). Despite the complexity of this decision, entrepreneurship is of vital importance for securing economic growth and development, and there is still a growing number of people that turn to entrepreneurship as their main source of income which indicates that the new venture creation decision is an important phenomenon to understand (Chandler, DeTienne, McKelvie, & Mumford, 2011; Global entrepreneurship monitor [GEM], 2018; Hitt, Keats & DeMarie, 1998; Scheinberg & MacMillan, 1988; Lavoie, 2015). When one examines the new venture creation decision, innovation is commonly cited as a primary motivation for starting a business with some scholars suggesting it to be a prerequisite to becoming an entrepreneur (Blaise, Toulouse, & Clement, 1990; Mitchell et al., 2002; Mueller & Thomas, 2001; Shane, Kolvereid, & Westhead, 1991;). However, with the world globally connected at increasing speeds and ease, culture is of increasing importance for entrepreneurial behaviors such as innovation and the new venture creation decision (Hayton, George, & Zahra, 2002). Therefore, this study examines how culture and innovation influence the new venture creation decision in order to achieve a deeper understanding of how the new venture creation decision is formed.

With that being said, decision-making in the context of entrepreneurship has been getting increased interest from scholars in which they hold a strong focus on traditional theories like the rational approach which is conceptualized as a causation-based decision-making model (Busenitz et al., 2003; Perry, Chander, & Markova, 2012; Shane, 2003). However, there seems to be a shift from traditional theoretical perspectives to the emerging theoretical perspectives for entrepreneurship research (Eisenhardt, Kotha, Meyer, & Rajagopalan, 2010). Sarasvathy (2001) contributed to this shift by identifying that the decision of venture creation relies on the notion of effectuation versus causal processing. Effectuation is an alternative model to the traditional causation-based model in which a typically resource-poor entrepreneur follows a more heuristic and inductive approach for the creation of a new market artifact in an uncertain environment (Sarasvathy, 2001). The traditional theoretical perspectives describe the new venture creation

decision as a process that is based on setting goals and targets based on competitive analysis and predicting an uncertain future, to explore and exploit where opportunities lie for a new venture (Perry et al., 2012). When an entrepreneur decides to exploit an opportunity, he takes the next step and collects the needed resources based on pre-existing knowledge to develop and deliver a product or service in order to exploit the identified opportunity. However, Sarasvathy (2001) claims there is an alternative which opposes the planned behavior approach. She describes this planned behavior approach as “causation” and theorized that it can occur simultaneously with “effectuation”, overlapping and intertwining over different contexts of decisions and actions. Effectuation-based decisions contrast with causation in the sense that it has no end goal, and that it focuses on exploring and exploiting opportunities based on a given set of means (Sarasvathy, 2001). In response to the study by Sarasvathy, recent research calls for more data collection on effectuation whereby they elaborate on three specific problems (Arend, Saroochi, & Burkemper, 2015). First, current scales measuring effectuation and causation seem to be lacking validity (Alsos et al., 2014). Second, Sarasvathy (2001) argues that expert (i.e., more experienced) entrepreneurs show a more effectual way of reasoning. On the contrary, less experienced entrepreneurs are typified as “novice” entrepreneurs and are expected to use a more causal way of reasoning (Sarasvathy, 2009). Following critique on the linkage between effectuation and expert entrepreneurs (e.g., Baron, 2009; Fischer & Reuber, 2011), Arend et al. (2015) determined a need for a valid comparison group to effectuation (e.g., causation) in order to give robustness to the expert entrepreneur. Third, current literature does not explain which behavioral fundamentals and causes drive the observed patterns of effectuation and causation (Arend et al., 2015). As a result, based on the criteria for a theory described by Lawrence (1997), this appears to put effectuation into the category of an instrumentalist theory because the connections among units are described but not explained, which does not qualify as a theory. Overall, to make the shift to an actual new theoretical perspective, we examine the influence of antecedent variables innovation and culture towards effectuation and causation.

For years, scholars have suggested the relationship between innovation and the new-venture creation decision as an important path. Already in 1934, Schumpeter explained that entrepreneurial activities like new venture creation are considered an important source of technological innovation whereby the role of entrepreneurs can be described as a catalyst for change (Schumpeter, 2017). Gabor (1970) described

innovation as the process that turns an invention into a marketable product. Therefore, innovation is more than invention: “it also involves the commercialization of ideas, implementation, and the modification of existing products, systems and resources” (Bird, 1989, p. 39). Literature has distinguished two types of innovation: innovation that is measured in performance outcomes of firms, and innovation that is measured as behavior which is dependent upon the perceived attributes of the innovation. When choosing the most suitable conceptualization of innovation, one should bear in mind that people drive innovation (Hauser, Tellis, & Griffin, 2006). Therefore, innovation as a personality construct, also defined as innovativeness, is an intuitively more accurate interpretation of innovation. Building on this, research of Brettel, Mauer, Engelen, and Küpper (2012) identifies relations between the different types of new venture creation and innovativeness. However, this relation seems to be in a premature phase for the effectuation theory, since Arend et al. (2015) identified that scholars see a need for effectuation theory to hypothesize about related creative activity, such as innovativeness. The traditional definition of entrepreneurship is called “the creation of new value” (Shane & Venkataraman, 2000). However, the current effectuation theory lacks a description of how value is created since it just simply assumes that it is created. One behavioral fundamental that leads to value creation is innovativeness which is therefore interesting to investigate further (Arend et al., 2015). However, it is acknowledged that culture also seems to play an important role in the relationship between innovativeness and the new venture creation decision (Hayton et al., 2002).

Exploring the influence of culture, one should bear in mind that due to increased globalization entrepreneurs from different countries do not simply locate and keep their business in their home country, but they are able to do business and start companies all around the world. Hence, these entrepreneurs must deal with different cultures within a country (Foxall, 1990, 1992; Hofstede, 1984; Zhang, 1999). Smith, Dugan, Peterson and Leung (1998) add to this by stating that entrepreneurs from different cultural backgrounds prefer different ways of handling certain situations. Thus, the decision-making process of a person is influenced by the national culture he is related to (Hopp & Stephan, 2012). More specifically, with scholars continually linking culture with the new venture creation decision (e.g., Gartner, 1985; Hayton

et al., 2002; Mitchell, Smith, Seawright, & Morse, 2000), there is currently a growing list of authors that theorize that culture specifically influences the effectuation and causation-based new venture creation decision (e.g., Laskovaia, Shirokova, & Morris, 2017; Stienstra, Harms, & Groen, 2012). However, there are also scholars that argue that culture does not influence the effectuation-based new venture creation decision (e.g., Sarasvathy, Kumar, York, & Bhagavutala, 2014; Sarasvathy, Dew, Read, & Wiltbank, 2008), which illustrates the disagreement in the current literature with regard to the influence of culture on the effectuation and causation-based new venture creation decision. Findings on the relationship between culture and innovativeness seem more consistent since, despite the increased globalization, culture is still theorized to influence the innovativeness of an entrepreneur (Efrat, 2014). Although some change had occurred in the impact of culture over the years, most cultural aspects still demonstrate a strong and lasting impact on the tendency to innovate (Efrat, 2014). Overall, these findings indicate that understanding cultural influences on the innovativeness and effectuation and causation-based new venture creation decision of an entrepreneur is crucial to the understanding of how an entrepreneur comes to the new venture creation decision.

Current literature shows that there is still a deep division among cross-cultural researchers as to what constitutes culture, and how culture should be measured (Tung & Verbeke, 2010). Tung and Verbeke (2010) added to this that currently most studies which investigate the influence of culture use the values perspective of Hofstede (1984; 2001), who revealed that the culture of each nation differs on the dimensions of individualism-collectivism, uncertainty avoidance, power distance, long term-short term orientation and masculinity-femininity. However, this disruptive theory has caused a lot of debate amongst academics due to the fact that the study controversies itself by stating that culture is highly influential but at the same time disqualifying different types of cultures from having influence on individuals on an intra-national level (Brewer & Venaik, 2014; McSweeney, 2002; Tung & Verbeke, 2010). As Tung (2008) warned, the fallacious assumption of cultural uniformity can “risk the generation of results that mask or confound the phenomena under investigation” (P. 45). Given the earlier mentioned growing globalization which enables individuals from different cultures to move to another culture and therefore create more intra-national

differences in culture, there should not be an exclusive focus on cultural values, since it does not capture the complexity of culture (Gelfand, Nishii, & Raver, 2006). The growing recognition that significant differences can exist between people within a given nation-state will hasten the move toward the understanding of culture as a multi-level, multi-layered construct showing substantial variation within a single country (Gelfand et al., 2006; Leung et al., 2005; Miller, Thomas, Eden, & Hitt, 2008). One should also recognize that the extent of intra-national diversity can vary significantly from one country to the next, with each country characterized by a particular degree of cultural tightness-looseness (Gelfand et al., 2006). The latter is intended to gauge “how clear and pervasive norms are within societies, and how much tolerance there is for deviance from norms” (Tung & Verbeke, 2010, p. 1267). This concept of cultural tightness-looseness holds promise, as it can complement existing measures of cultural dimensions, not merely adding to the current inventory of cultural distance parameters.

Extant literature indicates that despite the acknowledged benefits of effectuation over causation and vice versa in specific situations and environments, there is still a lack of clarity about how the effectuation and causation-based new venture creation decision is formed in relation to culture and innovativeness. The main purpose of this study is to achieve a deeper understanding of the influence that perceived cultural tightness and innovativeness of an entrepreneur have on the application of effectual and causal entrepreneurial processes within a new-venture creation decision of a novice entrepreneur. Following the literature on effectuation, causation, innovativeness and cultural tightness as a guide, we hypothesize that innovativeness mediates the effect of cultural tightness on both effectuation and causation-based new venture creation decisions while this mediating effect differs between different levels of cultural tightness-looseness. Overall, with the proposed moderated mediation model, we aim to answer the following central research question:

To what extent do cultural tightness-looseness and innovativeness influence the application of effectuation and causation in the new-venture creation decision of a novice entrepreneur?

We test our hypotheses based on data derived from questionnaires, filled out by 109 novice entrepreneurs in the United States of America (from now on USA), resulting in a unique sample covering twelve states in

the USA. This allows us to measure to what extent novice entrepreneurs perceive their culture in terms of tightness-looseness, how innovative these novice entrepreneurs perceive themselves and to what extent they tend to use effectuation and causation. We test this in a moderated mediation model using both hierarchical multiple regression analysis and a structural equation model (from now on SEM).

Drawing from the analysis, this research will fill the void of several gaps in current research, and therefore offers the following contributions that are of considerable theoretical and practical value. First, we will contribute to the current literature by testing and assessing an alternative effectuation and causation scale opposing the current scales that are lacking validity (Alsos et al., 2014). Second, following the by scholars formulated need for a valid comparison group (e.g., causation) with regard to the effectuation-based new venture creation decision, and the current critique on the linkage between expert entrepreneurs and effectuation (e.g., Baron, 2009; Fischer & Reuber, 2011), this research will compare effectuation to the use of causation (Arend et al., 2015). More empirical evidence on novice entrepreneurs in relation to effectuation and causation will give more robustness to the expert entrepreneur definitions which holds scientific value for further developing the effectuation theory. Third, our research contributes to effectuation literature by responding to numerous calls for studies examining the antecedent variables toward how an entrepreneur forms a business (Arend et al., 2015; Chandler et al., 2011; Perry et al., 2012). Culture and innovation are established as relevant antecedent variables. Be that as it may, more research needs to be done on the relationship between new venture creation and culture (Hayton et al., 2002), culture and innovation (Efrat, 2014; Hayton et al., 2002), and the relationship between innovation and the new venture creation decision (Arend et al., 2015; Hurley & Hult, 1998). More specifically, we address the disagreement in the literature about the influence of culture on the effectuation and causation-based new venture creation decision. Thus, this study will contribute to the current literature by providing empirical research on these relationships to bring effectuation away from the instrumentalist theory that it is today and shed new light on the influence of culture on effectuation. Finally, the results of this thesis are useful for entrepreneurs in the USA since it provides a clear view of the American entrepreneurship culture and the influence that it has on their innovativeness and the use of effectuation and causation.

This thesis starts off with a theoretical framework which gives an introduction to the literature regarding

cultural tightness, effectuation/causation and innovativeness whereby different models for examination of the variables are elaborated on. Ultimately, hypotheses are formed regarding the relations between the variables which are illustrated in a testable framework. Secondly, the research approach is explained in the methodology chapter. In this chapter, it is explained which methods for collecting the necessary data have been chosen. Furthermore, this chapter describes the way the data is analyzed. Afterward, the findings of this analysis are shown in the results section. In this chapter, the outcomes are compared to the hypotheses that are formulated in the theoretical framework chapter, and additional results are presented. Following this, the theoretical contributions and practical implications of this study are elaborated on, limitations of the research are mentioned and implications for further study are noted. Finally, a conclusion is drawn from the study to give a definite answer to the main research question

2. Theoretical framework

This literature review chapter will be done with the words of Walsh (1995) in the back of our head, who said that the contribution of any critical review “is to question our accumulated wisdom and push ourselves to build an even more rigorous and relevant program” (p. 302). To achieve this, the concepts are defined, and their theoretical models are elaborated on. The variables that are evaluated are effectuation/causation-based decision-making, innovativeness and cultural tightness-looseness. Ultimately, hypotheses are formulated and added to a testable framework.

2.1. Effectuation and causation-based new venture creation decision

With reference to Sarasvathy (2001), effectuation and causation are argued to be cognitive processes which imply that there are behaviors that are typical of effectuation and causation. However, these behaviors seem to depend on the level of experience that an individual has as an entrepreneur. In the context of attempting to start new businesses, Sarasvathy (2009) argued that effectual logic is emphasized in the earlier stages of venture creation with a transition to more causal strategies as the new firm and market emerge out of uncertainty into a more predictable situation. In addition to this, Dew, Read, Sarasvathy, and Wiltbank (2009) showed that in an exercise involving the evaluation of an entrepreneurial situation, 27 expert entrepreneurs used effectual logics more and used

causal logics less than 37 MBA students, which indicates that stated that there are behaviors that are typical of effectuation and causation.

To build on this, Sarasvathy (2001) argues that effectuation processes are more ubiquitous than causation processes in human decisions. This boils down to the underlying beliefs about the future phenomena that the decision maker has and how that impacts his approach to making the decision. If one wants to imagine possible effects and choose among them, the characteristics of the decision maker(s) and his (their) ability to identify and use contingencies over a dynamic process involving other decision makers interacting with one another become important. Similarly, if they believe they are dealing with relatively unpredictable phenomena, they will try to gather information through experimental and iterative learning techniques aimed at first discovering the underlying distribution of the future (Sarasvathy, 2001). Moreover, effectual logic is likely to be more effective in settings characterized by greater levels of uncertainty while causation is more common in less uncertain markets (Fisher, 2012). Given these typical behaviors and characteristics of effectuation and causation processes, the main difference lies in the distinctive principles in which they entail. Sarasvathy (2001) argues that an explanation for the decision of creating artifacts like firms, organizations and markets requires the notion of effectuation and/or causation-based approach which both consist of a collection of several sub-constructs or principles that indicate typical behaviors for causation or effectuation. Such principles were outlined already in Sarasvathy’s (2001) original contribution, where she described effectuation using a set of criteria used in entrepreneurial decision-making; focusing on affordable loss rather than expected return, on making commitments with external parties rather than competitive analyses, on exploitation of contingencies rather than exploitation of pre-existing knowledge, and on controlling an unpredictable future rather than predicting an uncertain one. These criteria were further developed and re-named by Sarasvathy (2009) into five principles (see table 1) and have served as the basis for other scholars seeking to operationalize effectuation theory for empirical research (Brettel et al., 2012; Chandler et al., 2011; Werhahn & Brettel, 2012). It is important to state that both effectuation and causation are integral parts of human reasoning that can occur simultaneously, overlapping in different situations and contexts of decisions (Sarasvathy, 2001;

Table 1

The five principles of effectuation and causation based on Sarasvathy (2001; 2009)

Categories of differentiation	Effectuation process	Causation process
Resources and goals	Beginning with a set of given means to choose the possible effects;	Beginning with a given effect to choose the possible means;
Risk-taking	Decision-making based on affordable loss;	Decision-making based on expected return;
Market penetration	Emphasizing strategic alliances and precommitments;	Exploiting the market through competitive analysis;
Competencies	Exploiting environmental contingencies through flexibility and experimentation;	Exploiting knowledge of means
Uncertainty	Seeking to control an unpredictable future	Predicting an uncontrollable future

Venkataraman & Sarasvathy, 2001), and more importantly, are not seen as opposites but rather as different strategies (Sarasvathy et al., 2008). Therefore, these two strategies are dealt with separately, while also acknowledging the possibility of these two different strategies to occur simultaneously.

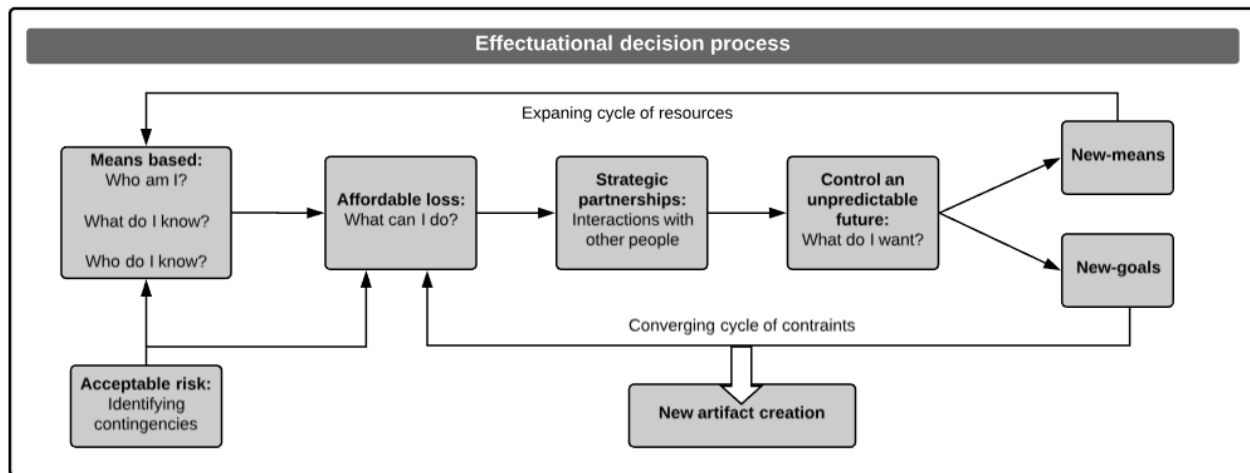
Effectuation process

To understand the effectuation process, one should not only consider the five pre-explained principles but also its dynamics. The static principles are connected through two concurrent cycles: expanding means and converging goals. Regarding the first cycle (expanding means), the effectual network is increased through stakeholder membership and as a result increases the resources. The second cycle (converging goals) entails the conceptualization of specific goals of the artifact that reckon with the identified constraints (Sarasvathy & Dew, 2005). In short, through the effectuation process, entrepreneurs will execute on commitments made with stakeholders leading up to converging of goals while simultaneously growing their means through expanding their stakeholder network (Sarasvathy et al., 2014). The specific steps that entail this dynamic model were first coined by Sarasvathy in 2009 whereby Sarasvathy in a later study in 2014 added the notion of exploiting contingencies in the model. The process will now be explained in a chronological order to give an insight into how this effectuation process works according to the theory of Sarasvathy (2001; 2009).

The effectuation process starts off by taking a set of means as given and focus on selecting between possible effects that can be created with that set of means (Sarasvathy, 2001, p. 245). This describes the means that are known as “whom I know”, “what I

know” and “what I am” and is also known as the Bird in the hand principle (Sarasvathy et al., 2014). To build on this, Read, Dew, Sarasvathy, Song, and Wiltbank (2009) explained the importance of exploiting contingencies by stating that when one seeks a new direction for the new venture it is indispensable to use new information and accept risks. Therefore, the decision makers are encouraged to deal with contingencies instead of avoiding them which is also known as the lemonade principle (Sarasvathy & Dew, 2005). Exploiting contingencies is explained to entail embracing unexpected events and turning them into profitable opportunities, thereby influencing both the given resources and how an entrepreneur experiences the affordable loss that he determines. With this set of means and exploited contingencies, the entrepreneur enters an ongoing process of exploration on what they can do, whereby the entrepreneur engages in activities and allow goals to emerge and change as they exploit the means under their control (as cited in Fisher, 2012). Following the effectual approach, the entrepreneur only risks resources that he can afford to lose. This also drives strategic partnerships as the central method for expanding resources. To achieve these strategic partnerships, the entrepreneur then immerses in conversations with a variety of people they already know or don’t know. This results in some people making actual commitments to the new venture in which both parties carry risk (Sarasvathy, 2001; Chandler et al., 2011; Sarasvathy et al., 2014). Following the study by Sarasvathy (2009), the fifth principle of nonpredictive control emphasizes the controllable aspects of an unpredictable future following the logic of predicting the future to the extent we can control it. The decision maker is aware of all the aspects that they can control in the earlier mentioned principles and how he can deal with that in

Figure 1
Effectuation process based on Sarasvathy (2001; 2009) and Sarasvathy et al. (2014)



such a way that the new venture can be developed even in an uncertain and complex environment (Read et al., 2009). Overall, this process indicates the principles that are applied, and in what order they are applied, when an effectuation-based decision is made (see figure 1).

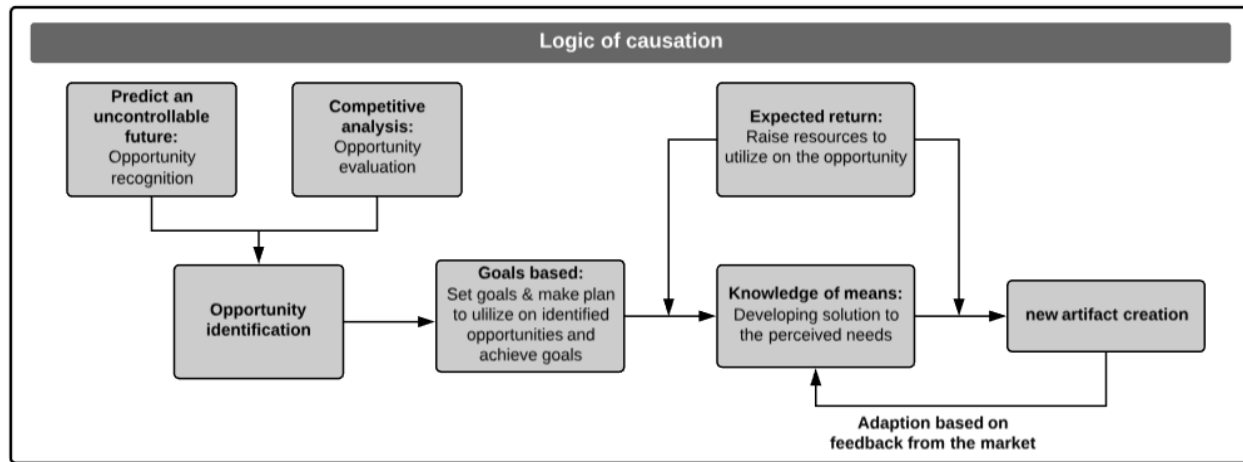
Causation process

In contrast to the effectuation theory, causation is predominantly used if one wants to find a method to achieve a chosen effect and is generally believed to be the best, the fastest, the most efficient, or the most economical method to achieve this (Brinckmann, Grichnik, & Kapsa, 2010; Sarasvathy, 2001). If the decision makers believe they are dealing with a measurable or relatively predictable future, they will tend to do some systematic information gathering and invest some effort on a reasonable analysis of that information, within certain bounds (Sarasvathy, 2001). Furthermore, entrepreneurs set goals and establish plans to concretize their intentions and attract resources (Katz & Gartner, 1988). “By helping firm founders to make decisions, to balance resource supply and demand, and to turn abstract goals into concrete operational steps, business planning reduces the likelihood of venture disbanding and accelerates product development and venture organizing activity” (Delmar & Shane, 2003, p. 1165). Overall, the literature predominantly dwells upon the explanation on the specific causation principles but not on the order of these principles. The research of Fisher (2012) provides the best fit in this context by adapting the classic approach to entrepreneurship of Shah and

Tripsas (2007) and assessing them as a dynamic model of entrepreneurship.

The causation approach takes the identification of an opportunity as a starting point. For the causal process to be applicable, the market for a product or service needs to exist prior to exploitation, and historical information must be available to evaluate opportunities and assess means to exploit those opportunities (Sarasvathy, 2001). The existence of a market and the existence of information about the market, is therefore a boundary condition for this approach (Fisher, 2012). The process of taking advantage of these opportunities is conceptualized as occurring in two stages: the discovery/recognition of the opportunity and the evaluation of whether or not to exploit the opportunity and form a firm (Venkataraman, 1997; Shane and Venkataraman, 2000). To recognize the opportunity, one should bear in mind the principle of “to what extent we can predict future, we can control it”. The focus is on the predictable aspects of an uncertain future in this logic (Sarasvathy, 2001). This means that they predict a future situation of a new product or market in order to recognize an opportunity and react to it (Sarasvathy et al., 2008). To further predict, the evaluation of this opportunity follows the logic of exploiting the market through competitive analysis. This has traditionally been a key input to the strategy formulation (Porter, 1979). To build on this, the causation processes take a particular goal that is formulated based on the identified opportunity and focuses on selecting between means to reach that goal. In other words, causation can be seen as identifying a given effect and finding the necessary resources to

Figure 2
Causation process based on Sarasvathy (2001; 2009) and Shah and Tripsas (2007)



create this effect (Sarasvathy, 2001). These resources are allocated based on expected return (As cited in Fisher, 2012). Following this logic, when the prediction of the future is made, the existing knowledge of the means and the expected return is used to develop solutions to the perceived needs of the market. Overall, these principles compose an on order dependent decision-making model that explains the causation process (see figure 2).

2.2. Innovativeness

Current literature gathers the personality-based innovativeness construct under the global trait view. Personality traits are thought to be relatively enduring patterns of behavior or cognition that differentiate people. Innovativeness is a personality trait that is, to a greater or lesser degree, possessed by all members of a society. The existing literature has been fairly varied in defining the global personality trait view of innovativeness in which openness to change (Popkins, 1998), curiosity and motivation to learning (Costa & McCrae, 1992), creativity (Jackson, 1976), willingness to adapt to change (Hurt, Joseph, & Cook, 1977), and time-bounded adaptation (Roger & Shoemaker, 1971) are all key points that the conceptualizations of innovativeness entail. Following the suggestion of Goldsmith and Foxall (2003) only the conceptualizations that seem to do a reasonable job measuring global innovativeness are included. These conceptualizations entail Jackson (1976), Kirton (1976), NEO (Costa & McCrae, 1992), and Hurt et al. (1977). All key points of the conceptualization from these studies will be further explained before a broad consensus about the best fitting term for this study will

be reached. Kirton (1976) was one of the first authors to come up with a measurable conceptualization of innovativeness. He argued that individuals could be placed on a continuum ranging from an ability to “do things better” (i.e., innovation through incremental improvements) to an ability to “do things differently” (i.e., innovation through changing the way things are) which are labeled respectively as adaptors and innovators. Although adaptors also create but in a more incremental way, the literature on creativity has concentrated on describing innovators who tend to come up with more radical improvements than adaptors (As cited in Kirton, 1976). Based on table 2, one can conclude that adaptors of innovation describe the bureaucratic personality that is suited to work within institutions and align with the definition of Rogers and Shoemaker (1971) which may be interpreted as a willingness to adapt to change. Moreover, the man best fitted to work within set structures works in impersonalized relationships: reducing conflict, minimizing risks, and managing to solve problems by proceeding at a disciplined pace in a predictable direction (as cited in Kirton, 1976). On the contrary, an innovative man is less conforming to rules, social norms, and accepted work patterns. He can even accept deviations from accepted ideas if based on good reasons (as cited in Kirton, 1976). Innovative change not only follows along unexpected lines but is often associated with memorable (and to the adaptor, unpleasant) precipitating events. When the innovator threatens to create upheavals (e.g., innovations) in a period of no obvious crisis, he may well be viewed with distaste while he persists in such threatening behavior – which he is likely to do (as cited in Kirton,

1976). Kirton lists qualities of the creative person, which fit the innovator better than the adaptor. As cited in Kirton (1976), the creative person (a) has little awe of traditional knowledge or practice; (b) compulsively toys with ideas; and (c) displays a high need for social recognition, that is, wants his ideas to be judged good, without regard to their latent or manifest heretical challenge to consensus. In Rogers' view, the creative man is a loner; and so is the innovative man, for once he departs from consensus he is on his own. Even though he may convert others to some new view of his own, he would on each attempt be viewed as the cause of discord and friction.

To build on this, the study by Hurt et al. (1977) also focuses on innovativeness as a global personality trait describes this as a “willingness-to-change” (adaptor). They focus on predicting the behaviors that being an adaptor entails whilst also differing from this by acknowledging characteristics of an innovative man as

key psychometric characteristics of this adaptor (e.g., creativity and originality). A later study by McCrae and Costa (1987) also recognizes originality and creativity as relevant characteristics and add to this by describing imaginability and need for variety as valuable factors in their conceptualization of innovativeness being an “openness to experience”. Similar to the latter mentioned study, in Jackson’s (1976) personality theory, innovativeness exists alongside other personality traits that describe “a variety of interpersonal, cognitive, and value orientations likely to have important implications for a person’s functioning (p. 9). The innovation subscale of the JPI (1976) described an innovator as “a creative man and incentive individual, capable of originality of thought; motivated to develop novel solutions to problems; value new ideas; likes to improvise” (p. 10). Goldsmith (1984) stated that this conceptualization is one of the few that comes close to the aforementioned dimensions of traits presented by Kirton.

Table 2

Adaptors vs. Innovators, a description of behaviors based on Kirton (1976)

Adaptor	Innovator
Characterized by precision, reliability, efficiency, methodicalness, prudence, discipline, conformity.	Seen as undisciplined, thinking tangentially, approaching tasks from unsuspected angles.
Concerned with resolving problems rather than finding them	Could be said to discover problems and discover avenues of solution.
Seeks solutions to problems in tried and understood ways	Queries problem’s concomitant assumptions; manipulates problems.
Reduces problems by improvement and greater efficiency, with maximum of continuity and stability	Is catalyst to settled groups irreverent of their consensual views; seen as abrasive, creating dissonance.
Seen as sound, conforming, safe, dependable	Seen as unsound, impractical; often shocks his opposite.
Liable to make goals of means	In pursuit of goals treats accepted means with little regard.
Seems impervious to boredom, seems able to maintain high accuracy in long spells of detailed work.	Capable of detailed routine (system maintenance) work for only short bursts. Quick to delegate routine tasks.
Is an authority within structures	Tends to take control in unstructured situations
Challenges rules rarely, cautiously, when assured of strong support	Often challenges rules, has little respect for past custom.
Tends to high self-doubt. Reacts to criticism by closer outward conformity. Vulnerable to social pressure and authority; compliant.	Appears to have low self-doubt when generating ideas, not needing consensus to maintain certitude in face of opposition.
Is essential to the functioning of the institution all the time, but occasionally needs to be "dug out" of his systems.	In the institution is ideal in unscheduled crises, or better still to help to avoid them, if he can be controlled.
When collaborating with innovators: supplies stability, order and continuity to the partnership.	When collaborating with adaptors: supplies the task orientations, the break with the past and accepted theory.
Sensitive to people, maintains group cohesion and Cooperation	Insensitive to people, often threatens group cohesion and cooperation.
Provides a safe base for the innovator's riskier operations.	Provides the dynamics to bring about periodic radical change, without which institutions tend to ossify.

However, there seems to be a lack of clarity in the literature about the link between observable behavior and the trait innovativeness. Midgley and Dowling (1978) stated in their study containing 23 single methodology studies on innovativeness that many studies make the, in their view weaker, assumption of a direct correspondence between observable behavior and the trait innovativeness. For example, a more recent study on innovativeness measurements describes the latter as “reactions of these people to the new and different” (Goldsmith & Foxall, 2003, p. 324). These reactions range from a very positive attitude toward change to a very negative attitude whilst they tend to follow a bell-shaped normal distribution across the population (Rogers, 1995). The prime focus of this lack of clarity lies in the underlying assumption that innovative behaviors like short time of adoption can be equated with innovativeness, and in doing so ignore the dynamic social processes which characterize the diffusion of innovations. Essentially, according to Midgley and Dowling in 1978, the conceptualization of innovativeness accepted by many previous authors is that of a simplistic trait-behavior model, and as such represents a theoretical stance largely discredited in other areas of the behavioral sciences (as cited in Midgley & Dowling, 1978). The trait-behavior model is therefore an inadequate representation of any specific innovation if the complex situational and communication effects that intervene between individuals' innovativeness and their innovative behavior are not described in their conceptualization.

Following this logic, the question that still hinges is which conceptualization is more suitable to measure innovativeness of an entrepreneur from a global trait perspective. First, Scott and Bruce (1994) name the study by Kirton (1976) as a conceptualization of innovativeness that describes behaviors of the innovative man. Given the lack of clarity between innovativeness as a trait and the resulted behavior, it does not seem to be sensible to use this definition. However, with reference to Kirton (1976), the conceptualization as a “willingness-to-try new things” does seem to be fitting to innovativeness. This implies that the study by Hurt et al. (1977) does not meet this requirement since it addresses the “openness to change” and therefore focuses on the adaptor. Overall, we follow the suggestion of Goldsmith (1984) who stated that the conceptualization of Jackson is a representative conceptualization of the described dimensions of traits by Kirton. These traits mainly boil down to creativity and originality, and suits well with

the definition that Jackson (1976) uses for innovativeness which is “creativity in thought and action”.

2.3. Cultural tightness-looseness

To assess the concept of cultural tightness-looseness, one should first determine its general concept. Tightness-looseness is a theory that aims to operationalize the measurement of national culture. National culture can be defined as the collective programming of the human mind creating and learning standards for perception, cognition, judgment, or behavior that distinguishes one group or category from another (Holmes, Miller, & Salmador, 2013). Culture is generally specified as durable, long-lasting, and relatively stable, with incremental changes occurring slowly (Brett, Tinsley, Janssens, Barsness, & Lytle, 1997; McGrath, MacMillan, Yang, & Tsai, 1992; Reed, 1996). Culture can be distinguished in four levels: symbols, heroes, rituals and values, of which the first three levels are described as cultural practices and are deemed more tangible than values (Hofstede, 2001; Hofstede & McCrae, 2004). Moreover, cultural values represent an individual's view of how the society should behave, whilst cultural practices represent the individual's perception of how cultural norms are actually enacted in organizational and societal behaviors, and in institutional policies and prescriptions (Segall, Lonnen, & Berry, 1998).

In this light, Gelfand et al. (2011) developed a theory called tightness-looseness, that explains that an individual's perception towards cultural norms is embedded within national culture. Pelto (1968), an anthropologist, was the first to theorize on tightness-looseness, arguing that traditional societies varied on their expression of, and adherence to social norms. Triandis (2018) followed up on this work in his book, which was first published in 1995, and explained that tightness refers to the extent members of a culture (1) agree about what constitutes correct action; (2) must behave exactly according to the norms of the culture; and (3) suffer or offer severe criticism for even slight deviations from norms. Ultimately, these three components of tightness-looseness can be recapitulated as the strength of social norms and tolerance of deviant behavior within a nation (Gelfand et al., 2011). To further explain this, Gelfand et al. (2011) stated that “tightness-looseness is part of a complex, loosely integrated multilevel system that comprises distal ecological and historical threats, broad versus narrow socialization in societal

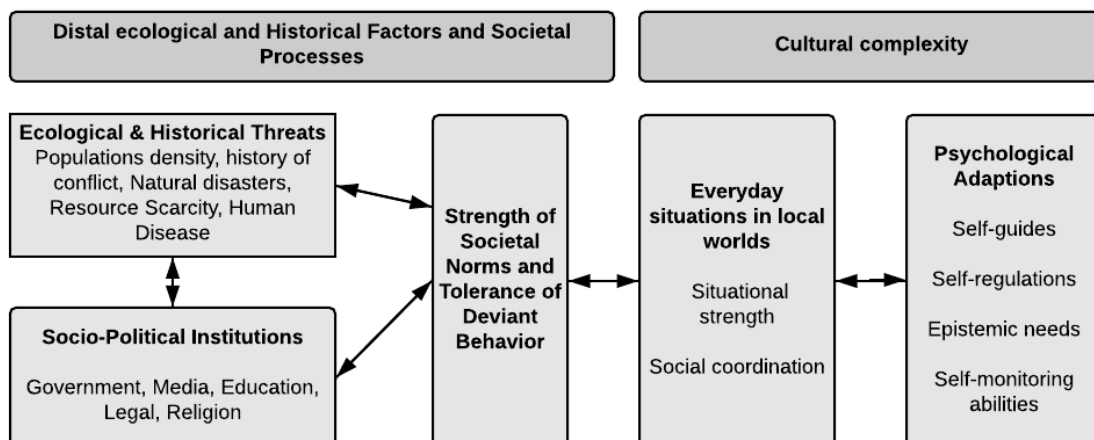
institutions, the strength of everyday recurring situations, and micro-level psychological affordances” (P. 1100). This complex multilevel system can be found in figure 3 and will be elaborated on in the latter part of this chapter. First, the original contributions to the theory per sub-construct will be explained. After that, the conceptualization that Gelfand made of the several sub-constructs of the tightness-looseness model in 2011 will be expanded on.

The originating process, namely psychological adaptations and recurrent episodes in local worlds and the distal ecological and historical factors and societal processes, are both influenced by the level of individualism or collectivism within the individual (Triandis, 1989, 2018). There are several factors that increase a person’s proclivity toward either individualism or collectivism. These factors can influence individuals within the two different types of cultures, partly accounting for the variety within the culture. Factors that play a role are age, social class and child rearing (Triandis, 2018). Also, there are several attributes of an individual that indicate whether a person is individualistic or collectivistic. These attributes are self-perception, attributions, identity and emotions, cognitions, motivation, attitudes, norms, values, social behavior, communication, conflict resolution, morality, responsibility and personality. These attributes can be linked with how an individual perceives itself, and how it deals with everyday situations (Triandis, 2018). The probability that the private selves are sampled, rather than the other selves, increases with higher individualism. Conversely, in collectivist cultures, child-rearing emphasizes the importance of the collective; the collective self is more

complex and more likely to be sampled. The expected lower rates of sampling of the collective self in individualistic cultures were obtained by Triandis (1989). Overall collectivism is maximal in tight, simpler cultures. Conversely, individualism is maximal in loose, complex cultures (Triandis, 2018). Gelfand et al. (2011) constitute individualism and collectivism as a distinct concept from the tightness-looseness system model. Both concepts could influence each other and share some similar antecedents (e.g., historical and human-made threats), but they are not covered by all factors that are named in the model, which are explained in the next sections of this chapter. First, we assess the distal ecological and historical factors, and societal process which constitutes the ecological and historical threats, socio-political institutions and the strength of societal norms and tolerance of deviant behavior. Afterward, we assess the cultural complexity that consists of the everyday situations in local worlds and the psychological adaptations of the individual itself.

Historically, nations encounter various ecological and human-made societal threats which provide tightness-looseness within a nation (Berry, 1979; Triandis, 1972). It is generally hypothesized that ecological and human-made threats increase the need for strong norms and punishment of deviant behavior, in the service of social coordination for survival, whether it is to reduce chaos in nations that have high population density, deal with resource scarcity, coordinate in the face of natural disasters, defend against territorial threats, or contain the spread of disease. When a certain nation faces these particular challenges, they are more likely to develop strong norms and have a low

Figure 3
A system model for tightness-looseness retrieved from Gelfand et al. (2011)



tolerance of deviant behavior to enhance order and social coordination to effectively deal with such threats. However, crime rates are generally lower in tight cultures, so the strong norms and low tolerance of deviant behavior also influence the threats (Triandis, 2018). In contrary, nations with few ecological and human-made threats have a much lower need for order and social coordination, affording weaker social norms and much more latitude (Gelfand et al., 2011). This correlates with generally higher crime rates in a loose culture like that so the looseness also influences the crime rates (Triandis, 2018).

Dominant institutions and practices also represent the strength of social norms and tolerance of deviant behavior. Arnett (1995) stated that institutions in tight nations have narrow socialization that restricts the range of permissible behavior, whereas institutions in loose nations encourage broad socialization which affords a wide range of permissible behavior. However, tight nations are more likely to have autocratic governing systems that suppress dissent, to have media institutions like broadcast, paper and internet with restricted content and more laws and controls, and to have criminal justice systems with higher monitoring, more severe punishment, and greater deterrence and control of crime. Moreover, religion will also be more prominent in tight nations and therefore reinforcing devotion to moral conventions and rules that can facilitate social order and coordination (Norenzayan & Shariff, 2008). Challenges to societal institutions like demonstrations, boycotts and strikes will be much less common in tight nations than in loose ones. The strength of norms and tolerance of deviance within nations are reflected and supported simultaneously by these institutions (Gelfand et al., 2011).

On top of distal ecological, historical, and institutional contexts, there is also tightness-looseness manifested in everyday situations in local worlds that individuals inhabit (Kitayama, 2002; Fiske, Kitayama, Markus, & Nibett, 1998). When a society is relatively homogeneous, the norms and values of ingroups are similar. But heterogeneous societies have groups with dissimilar norms. If an ingroup member deviates from ingroup norms, ingroup members may have to make the painful decision of excluding that individual from the ingroup. Because rejection of ingroup members is emotionally draining, cultures develop a tolerance for deviation from group norms. Such cultures are heterogeneous cultures, and cultures in marginal positions between two major cultural patterns are

flexible in dealing with ingroup members who deviate from ingroup norms (Triandis, 1989). On the contrary, homogeneous cultures are often rigid in requiring that ingroup members behave according to tight ingroup norms. Gelfand et al. (2011) explained that situational strength is a subject has long been discussed among psychologists, sociologists, and anthropologists (e.g., Price & Bouffard, 1974; Boldt, 1978) but has yet to be linked to cultural variation. As cited in Gelfand et al. (2011), tightness-looseness is reflected in the predominance of strong versus weak everyday situations in which contradictory elements are echoed in the high censoring potential, little room of individual discretion, and restricted range of appropriate behavior in strong situations whilst weak situations place few external constraints on individuals, afford a wide range of behavioral options, and leave much room for individual discretion. It is expected that tight nations have a considerable higher degree of situational constraint which restricts the range of behavior deemed appropriate across everyday situations such as classrooms, libraries and public parks. On the contrary, loose nations have a much weaker situational structure, affording a much wider range of permissible behavior across everyday situations. The strength of these everyday situations within nations simultaneously reflects and supports the degree of order and social coordination in the larger cultural context (Gelfand et al., 2011). Social coordination involves the interpersonal matching of thoughts, feelings and behaviors, as well as the synchronization of rhythms and roles with other people (Ackerman, Joshua, & Bargh, 2010).

The study by Gelfand et al. (2011) further theorizes a close connection between the degree of strength in everyday situations and the chronic psychological processes of individuals within nations. In earlier work of Triandis (1989), these chronic psychological processes of individuals are referred to as “the self”. This broad definition indicates that all aspects of social motivation are linked to the self. Attitudes (e.g., I like X), beliefs (e.g., I think that X results in Y), intentions (e.g., I plan to do X), norms (e.g., in my group, people should act this way), roles (e.g., in my family, fathers act this way), and values (e.g., I think equality is very important) are aspects of the self (Triandis, 1989). However, one major distinction among aspects of the self is between the private, public, and collective self (Baumeister & Heatherton, 1996; Greenwald & Pratkanis, 1984). The private self involves traits, states or behaviors of the person (e.g., “I am innovative”).

The public self is based upon the view of other people on the self (e.g., “people think I am innovative). When one talks about cognitions that concern the view of a collective like family, coworkers or a tribe then the collective self is in place (e.g., “My family thinks I am innovative”). These distinctions can be linked to preceding psychological literature dealing with self-monitoring, self-consciousness, and the complexity of the self (as cited in Triandis, 1989). Ultimately, Gelfand et al. (2011) composed these distinctions of “the self” in a set of four factors namely “self-guides”, “self-regulation”, “epistemic needs” and “self-monitoring abilities”. First, self-guides represent the extent to which individuals are concerned with conforming to normative rules (Higgins, 1987). Second, the skill to control impulses is acknowledged as self-regulation (Gelfand et al., 2011). Third, epistemic need or the desire for clear knowledge and information is expected to be expressed in the need for structure, need for an ordered environment and reliance on formalized social scripts in their interactions with others (Neuberg & Newsom, 1993). Lastly, the ability to monitor and adjust someone his behavior to the context is related to the self-monitoring ability (Gelfand et al., 2011). High self-monitors sample the situation and sample the public self more than low self-monitors do, who have a more situation independent self and sample mostly the private self (Triandis, 1989).

To build on this, the situational demands are of big influence on how these types of selves are sampled, since they are heavily supported by, and are naturally attuned to, the individual’s psychological processes. (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Furthermore, chronic exposure to stronger situations in their everyday local worlds gives individuals the continued subjective experience that their behavioral options are limited, their actions are subject to evaluation, and there are potential punishments based on these evaluations (Gelfand et al., 2011). The higher degree of social regulation which exists at the societal level is mirrored in the higher amount of self-regulation, need for structure and self-monitoring ability, and a more prevention-focused self-guide at the individual level in tight and loose nations, respectively. Such psychological processes simultaneously reflect and support the strength of social norms and tolerance of deviance in the larger cultural context (Gelfand et al., 2011).

2.4. Hypotheses

Now that the theoretical concepts are defined, an estimation can be made of what could be expected regarding the outcomes of this research.

Proposed effect of cultural tightness on the use of effectuation and causation-based new venture creation decisions

The relationship between culture and the new venture creation decision is supported by different scholars in the research field. A conceptual rationale for the relationship between culture and behavior is that a loose culture offers a broader range of behaviors that are acceptable while tighter and more “strict” cultures give clearer guidelines of what is obligated and therefore a less broad range of behaviors are appropriate (Gelfand et al., 2011). As a result, tighter cultures are expected to have a stronger interpersonal matching of thoughts, feelings and behaviors making them simpler and more collectivist cultures than loose cultures that are deemed rather complex and individualistic (Ackerman et al., 2010; Gelfand et al., 2011; Triandis, 2018).

Effectuation and causation-based new venture creation decisions are considered behaviors that are influenced by the perceived tightness or looseness of culture. Effectuation is predominantly a behavior that occurs in a relatively unpredictable (i.e., complex) environment and is characterized by trying to follow a certain experimental behavior approach. Sarasvathy (2001) explained that effectuation relies on the characteristics of the actor and his ability to discover and use contingencies. However, to utilize these characteristics the environment should be supportive in the sense that it is unpredictable and allows for a wide range of behaviors. Therefore, it is expected that loose cultures enhance the effectuation-based new venture creation of firms.

Hypothesis 1a (H1a): *Tight perceived culture has a negative effect on the usage of effectuation-based new venture creation decisions.*

Although, it is not said that tight cultures do not give the opportunity to entrepreneurs to experiment and enter an uncertain market. Tight cultures can give guidelines on the new-venture creation process which correspond to the base assumption of the causation processes since they are more arrowed towards a given effect they want to create. Causational decision-making is known for having a specific purpose,

competitive analysis, predict an uncontrollable future and calculate expected return (Sarasvathy, 2001). One can compare this with using a business plan since this is simply a guideline or tool to achieve the main goal: create the described effect. Therefore, tight cultures predict the causation-based creation of new firms.

Hypothesis 1b (H1b): *Tight perceived culture has a positive effect on the usage of causation-based new venture creation decisions.*

Proposed effect of innovativeness on the use of effectuation and causation-based new venture creation decisions

There seems to be a general consensus about the influence that innovativeness has on the use of effectuation and causation of an entrepreneur. It has been explained that innovation is a core component of entrepreneurial activities being a common motivation for different approaches to the new venture creation decision (Thomas & Mueller, 2000; Brettel et al., 2012; Shane et al., 1991; Scheinberg & MacMillan, 1988). This statement is further explained by Shane et al. (1991) who report that the opportunity to be innovative and be in the forefront of new technology was frequently given as a reason for starting a business. The opportunity to innovate is also frequently cited in international studies as a motive for starting an enterprise (Scheinberg & MacMillan, 1988; Blaise et al., 1990). However, it has not yet been explained how innovativeness influences effectuation and causation-based decision-making in the new venture creation context. Innovativeness is considered to be the tendency to be creative in thought and action at whereby the innovator changes how things are and is less bound to accepted work patterns (Jackson, 1976). To observe a need or a possibility for change, an individual should have a focus on current contingencies which aligns with the effectuation principle of Sarasvathy (2001). Moreover, experimenting with different strategies seems more likely to occur when an individual has a positive attitude toward trying new things in general, or more specifically a change in strategy (Sarasvathy, 2001). On top of that, effectuation follows the affordable loss principle which explicates that entrepreneurs begin with a determination of how much they are willing to lose so that they can leverage which is expressed as “limited means in creative ways to generate new ends as well as new means” (Sarasvathy, 2009, p. 81). Thus,

higher innovativeness seems to have a positive effect on effectuation-based decision-making.

Hypothesis 2a (H2a): *High innovativeness has a positive effect on the use of effectuation-based new venture creation decisions.*

On the other hand, low innovativeness indicates low levels of creativity in thought and action, a stronger obligation to accepted work patterns and a tendency to avoid risks since these individuals have a preference for safe environments (Kirton, 1976). Causational decision-making is based on logic which disables a big part of the creative process since they follow a planned behavior approach and identify risks by predicting an uncontrollable future (Sarasvathy, 2001). Also, causation is predominantly present in a generally more predictable environment which aligns with the less innovative cognition of an adaptor. Therefore, low innovativeness seems to lead to causational decision-making.

Hypothesis 2b (H2b): *High innovativeness has a negative effect on the use of causation-based new venture creations.*

Innovativeness as a moderated mediator of the relationship between cultural tightness and the use of effectuation and causation-based new venture creation decisions

The literature is rich with descriptions on the direct influence of culture on the endogenous variables new venture creation decision and innovativeness. Already in 1980, Triandis attested to culture being an antecedent to human thoughts and behaviors. This view was later confirmed by Segall et al. (1998) which indicates that the innovativeness trait depends on the culture in which they operate. In a more recent study by Gelfand et al. (2011), it was explained that culture influences the psychological processes of an individual. These psychological processes are described as “self-guides”, “self-regulation”, “epistemic needs” and “self-monitoring abilities”. These concepts are described as respectively the extent to which individuals are concerned with conforming to normative rules (Higgins, 1987), the skill to control impulses (Gelfand et al., 2011), the need for an ordered environment and reliance on formalized social scripts in their interactions with others (Neuberg & Newsom, 1993), and the ability to monitor and adjust one’s behavior to the context (Gelfand et al., 2011). All these four concepts seem to be closely related to the concept

of creativity in thought and action of innovativeness (Jackson, 1976). Thus, one can conclude that culture seems to shape the trait “innovativeness” of an entrepreneur.

There is, however, still a consensus to be reached about how cultural tightness-looseness shapes the innovativeness of an entrepreneur. The study by Gelfand et al. (2011) showed that tight cultures are expected to have a higher degree of situational constraint which restricts the range of behavior deemed appropriate across everyday situations. By contrast, loose cultures are expected to have a weaker situational structure, affording a much wider range of permissible behavior across everyday situations. Individuals who are chronically exposed to stronger (versus weaker) situations in their everyday local worlds have the continued subjective experience that their behavioral options are limited, their actions are subject to evaluation, and there are potential punishments based on these evaluations. Accordingly, individuals in cultures with high situational constraint will have self-guides that are more prevention-focused (Eysenck & Eysenck, 1983) and thus will be more cautious (concerned with avoiding mistakes) and dutiful (focused on behaving properly). They will furthermore have higher self-regulatory strength (higher impulse control) (McCrae, Costa, Del Pilar, Rolland, & Parker, 1998), a higher need for structure, and higher self-monitoring ability (as cited in Gelfand et al., 2011). Put simply, a higher (or lower) degree of social regulation that exists at the societal level is mirrored in a higher (or lower) amount of self-regulation at the individual level in tight and loose cultures, respectively. It seems likely that these high self-guides, self-regulation, need for structure and self-monitoring leads to less innovative persons whilst low self-regulation enhances the innovativeness of an individual. Accordingly, we propose the following hypothesis:

Hypothesis 3 (H3): *Tight perceived culture has a negative influence on the innovativeness of an entrepreneur.*

Building on cultural tightness-looseness shaping the innovativeness trait of an individual, it is essential to stress the aforementioned importance of innovativeness for the effectuation and causation approach. In the previous section it was stated that a tighter perceived culture leads to lower innovativeness, nevertheless, the effect of cultural tightness-looseness on the use of effectuation or causation-based new

venture creation decision-making can vary. In this light, current literature also provides arguments for innovativeness being a crucial explaining variable in the relationship between cultural tightness and the new venture creation decision. Davidsson and Wiklund (1997) claimed that culture influences the psychological characteristics of individuals within the population to create a larger supply of potential entrepreneurs. Building on this, there are numerous studies that identify innovativeness as a common trait in the entrepreneurial profile (as cited in Thomas & Mueller, 2000) which distinguishes them from non-entrepreneurs (Mitchell et al., 2002; Thomas & Mueller, 2000; Mueller & Thomas, 2001). On top of that, to become an entrepreneur one must first make the decision to start a business. Therefore, if innovativeness is a trait that distinguishes entrepreneurs from non-entrepreneurs, the innovativeness trait of an individual is essential because it enables or disables the ultimate decision of new-venture creation and as a result becoming an entrepreneur.

Regarding the universality of this relationship, studies that identify the innovativeness trait as an important motivation for the new venture creation decision have taken place in different cultures which seems to indicate that regardless of the culture they operate in, entrepreneurs see the opportunity to innovate as a motivation to start a business (Thomas & Mueller, 2000; Brettel et al., 2012; Shane et al., 1991; Scheinberg & MacMillan 1988). Closely related to this subject is the topic of universal cognitions of an entrepreneur compared to non-entrepreneurs. One of the cognitions causing the decision to start a business is innovativeness, and there seems to be an increasing consensus about the fact that innovativeness is a cross-cultural cognition (Mitchell et al., 2002; Mueller & Thomas, 2001). Given that the trait of innovativeness seems to be a universal trait of an entrepreneur one can conclude that it explains the new venture creation decision independently of culture. However, there still seems to be a lack of clarity about how innovativeness conditions the relationship between the different approaches to new venture creation decisions.

Building on this, it was earlier hypothesized that tight cultures lead to causation-based new venture creation decision while loose perceived culture causes effectuation-based new venture creation decisions. Also, high innovativeness is considered to induce effectuation whilst high innovativeness restrains causation. Given that innovativeness explains the

relationship between cultural tightness and effectuation and causation, one could assume that this relationship is mediated by innovativeness. More specifically, high innovativeness could mediate the negative effect that a tight perceived culture can have on the use of effectuation. On the contrary, high innovativeness could also mediate the positive effect that tight perceived culture can have on the use of causation. Following this logic, we formulated the following hypotheses:

Hypothesis 4a (H4a): *Innovativeness mediates the expected direct negative effect of cultural tightness on effectuation.*

Hypothesis 4b (H4b): *Innovativeness mediates the expected direct positive effect of cultural tightness on causation.*

In the previous paragraph, it is theorized that cultural tightness-looseness shapes the innovativeness trait of an entrepreneur whilst innovativeness fully mediates the effect of cultural tightness on the new venture creation decision. Also, effectuation and causation are described as cognitive processes implying that there are behaviors that are typical of effectuation and causation (Sarasvathy, 2001). Effectuation-based new venture creation decisions are theorized to rely on the notion of creativity in thought and action of an innovative entrepreneur whilst high creativity in thought and action is hypothesized to negatively influence the causation-based new venture creation decision. However, with reference to Midgley and Dowling (1978), the complex situational and communication effects that intervene between individuals' innovativeness and their innovative behavior (e.g., effectuation) should also be considered. In this light, we identify tightness-looseness as a possible influencing factor on this relationship.

This claim is supported by Miron, Erez, and Naveh (2004) who added to this by explaining that innovative performance is significantly affected by three interactions: creativity and initiative, creativity and innovative culture, and initiative and innovative culture. They found that the creativity of an individual is not enough to affect innovation. Innovativeness should be indicated by high creativity that can be observed in the actions that an entrepreneur takes and the thoughts that he shares (Jackson, 1976). These creative actions can be both enhanced or restrained by the perceived culture of an entrepreneur. For instance, an innovative culture encourages individuals to search

for new ways of dealing with problems, taking risks, and exploring their ideas even when their outcome value is not clear (Amabile & Fischer, 2000; Scott & Bruce, 1994). These behaviors align with behaviors that are described as typical for effectuation-based new venture creation. However, when the culture does not support innovation, creative people do not reach high levels of innovation since their initiative towards creative behavior is not rewarded (Miron et al., 2004).

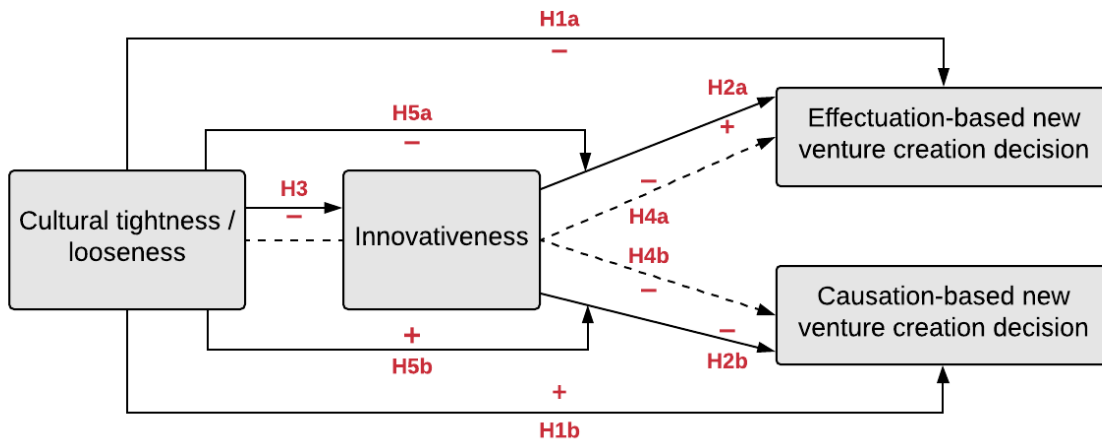
On top of that, cultural tightness-looseness represent the individual's perception of how cultural norms are enacted in organizational and societal behaviors, and in institutional policies and prescriptions (Segall et al., 1998). More specifically, cultural tightness-looseness explains the strength of social norms and tolerance of deviant behavior within a nation whereby tight nations have strong norms and low tolerance of deviant behavior, and loose nations weak norms and high tolerance of deviant behavior (Gelfand et al., 2011). Given that creativity is defined as the willingness to deviate from norms (Kirton, 1976), current theorizing suggests a negative influence of cultural tightness on creativity in actual behavior.

Based on this theorization, and the importance of describing the complex situational and communicational effects (Midgley & Dowling, 1978), it seems only logical to identify cultural tightness as an important situational factor in operationalizing the innovativeness trait to actual innovative behavior. As a result, one can argue that a tight culture moderates the positive effect of innovativeness on effectuation-based new venture creation and that a tight culture also moderates the negative effect of innovativeness on causation-based decision-making. Therefore, we formalize this logic in the following hypotheses:

Hypothesis 5a (H5a): *Cultural tightness fully moderates the expected positive effect of innovativeness on effectuation.*

Hypothesis 5b (H5b): *Cultural tightness fully moderates the expected negative effect of innovativeness on causation.*

Figure 4
Proposed theoretical model



Note. dotted line represents a mediating effect

When all these hypotheses are combined, the relationships imply a moderated mediation model (model 1) as described by Preacher, Rucker, and Hayes (2007), whereby the independent variable cultural tightness also acts as a moderator on the indirect influence of cultural tightness on both effectuation and causation via the mediator innovativeness. To visualize, in the current study it is tested if the following framework does hold (see figure 4).

3. Methodology

3.1. Sampling and respondents

During the summer of 2018, entrepreneurs are approached to fill in a survey which is sent by e-mail, with a link to a Google form. Entrepreneurs have also been directly asked to fill in a hardcopy of the survey. Entrepreneurs are chosen since this study aims to measure the new-venture creation decision which is inherent to being an entrepreneur.

We define entrepreneurship as “the practice of starting new organizations or revitalizing mature organizations, particularly new businesses generally in response to identified opportunities” (As cited in Trans & Korfflesch, 2016, p. 19). The entrepreneur in this process is an individual who is characterized as someone who demonstrates initiative and creative thinking, is able to organize social and economic mechanisms to turn resources and situations to practical account, and accepts risk and failure (Hisrich, 1990). More specifically, we selected novice entrepreneurs who started their own business. The initial effectuation principle is based on expert

entrepreneurs. However, novice entrepreneurs are chosen since literature has linked novice entrepreneurs to the use of causation which makes them a suitable comparison group to effectuation in order to give robustness to the expert entrepreneur definition (Arend et al., 2015). An entrepreneur is a novice when he has not more than five years of experience (Dew et al., 2009). Before data collection, it has come to the author that in the USA there is a considerable difference in regulations concerning registering your firm. This resulted in a trend that entrepreneurs are forced to register their company in an earlier stage in California than they are in Southern states like Georgia or Tennessee. As a result, the criteria for registering a firm is not applicable to the whole of the USA to obtain a representable sample of novice entrepreneurs. Therefore, student entrepreneurs that coincide in an incubator or accelerator program, didn't register their company but do consider themselves running an own firm have been treated as entrepreneurs. This aligns with the statement of Mueller and Thomas (2000) who identified students as a representative sample of entrepreneurs, and previous studies that have effectively utilized student samples (e.g., Isenberg, 1986; Mitchell et al., 2000). However, Dew et al. (2009) made an important remark that a sample that only consists of student entrepreneurs that all follow the same study would give a sample that is too one-dimensional in terms of experience. Following this remark, we followed their call to use a sample of novice entrepreneurs that have different levels of experience and backgrounds. Therefore, we collected a balanced sample consisting of novice entrepreneurs that both registered and not registered their company,

have various study backgrounds, and different levels of experience accounting for the maximum level of 5 years of experience.

The data has been put into one single sample which represents the whole of the USA. Different regions of the United States have been visited to collect data. The data collection is divided into different geographical locations since there are studies that claim that

subcultures may deviate significantly within a national culture because research is very limited on this subject (Davidsson, 1995; Davidsson & Wiklund, 1997). We divided this sample into four regions based on the statement by Sudman and Bradburn (1983) who explained that "The most widely used regional definitions follow those of the U.S. Bureau of the Census." (see appendix 1 for the specification). In

Table 3
Means, standard deviations and sample distribution

Descriptive variable	Mean	Standard deviation	Categories	Frequency	Percent
Age	28.66	7.946	19-30	73	67.0%
			31-40	26	23.8%
			41-50	9	8.3%
			51-60	1	.9%
Gender			Female	39	35.8%
			Male	70	64.2%
Region			Northeast	2	1.8%
			Midwest	4	3.7%
			South	81	74.3%
			West	22	20.2%
Industry type			Primary and secondary industry	64	58.7%
			Business service industry	39	35.8%
			N/A	6	5.5%
Primary objective			Profit and growth	79	72.5%
			Non-profit and socially responsible oriented objectives	13	11.9%
			To sustain myself	12	11.0%
			Other	5	4.6%
Education level Completed	3.14	1.258	High school	19	17.4%
			Community college	6	5.5%
			Bachelor's degree	41	37.6%
			Master's degree	27	24.8%
			Doctorate or professional degree	16	14.7%
Study type (STEM vs. NON-STEM)			STEM	41	37.6%
			NON-STEM	68	62.4%
Officially register their company			No	30	28.3%
			Yes	76	71.7%
Total years of experience			0-2	64	58.7%
			3-5	45	41.3%
Amount of venture founded	1.20	.880	0	17	15.6%
			1	65	59.6%
			2	19	17.4%
			3	4	3.7%
			4 or more	4	3.7%

these regions, several incubator and accelerator programs have been selected to encounter novice entrepreneurs. Overall, the sample consist of 156 respondents whilst one double response was deleted. 109 respondents comply with the standard of what we consider a “novice” entrepreneur in this study.

The sample distribution of Table 3 shows that the sample consists an evenly distributed sample regarding gender and industry type, compared to the public figures in a field of study that is, in the USA, predominantly occupied by men (GEM, 2018). On top of that, the sample consists of twelve different states spread out over the whole of the USA, but predominantly focused in the south and west. Also, the novice entrepreneurs in this sample are mainly focused on gaining profit and growth from their firm whilst their educational level and background are deemed evenly spread. Finally, we observe an even spread of experience in years whilst the majority of the novice entrepreneurs have registered at least one firm.

3.2. Measures

Effectuation and causation in the new venture creation decision

Instead of opting for a study on ventures in general, this study specifically chose to research entrepreneurs of new ventures. Alsos, Clausen, and Solvoll (2014), explained that after extensive research and analysis, they ultimately identified 10 items, each nominated from the 10 principles underlying effectuation and causation theorizing, that measure effectuation as a one-dimensional construct ($\alpha = .73$) and causation as a one-dimensional construct ($\alpha = .77$). Further, the scale is not mutually exclusive to be able to account for the possibility of combining the two strategies (Kraaijenbrink, Ratinho, & Groen, 2012), and more importantly, to avoid seeing them as opposites but rather as different strategies (Sarasvathy, 2009). This measurement scale is validated, and this gives the opportunity to examine how effectual and causal behaviors are related to other concepts, including examining their antecedents and effects as suggested by Perry et al. (2012) and Arend et al. (2015). The respondents rated all items on a 7-point Likert-scale ranging van totally disagree to totally agree. The scale is retrievable from the authors.

Innovativeness

The conceptualization of innovation as a personality construct permits the use of self-report techniques which enable to measure more systematically and predict innovativeness which is not deemed possible when a different conceptualization is chosen (Hurt et al., 1977). The Jackson Personality Inventory (1976) is the most suitable scale to use for our research purposes since it defines innovation as a tendency to be creative in thought and action. It exists alongside other personality traits such as conformity, risk-taking, or tolerance as one of a battery of traits that describe “a variety of interpersonal, cognitive, and value orientations likely to have important implications for a person’s functioning” (Jackson, 1976, p. 9). The Jackson Personality Inventory (Revised) contains 300 True/False items comprising 15 scales that are organized in terms of five higher-order dimensions. One of these 20-item scales is termed ‘innovation’ and measures the global personality dimension as described above. Jackson (1977) reports reliability coefficients of .83 and .87 for the innovation subscale. Moreover, in the study by Paunonen and Jackson (1996) the 15 scales are divided into five factors. The first factor can be defined as one clearly related to the Openness to Experience dimension of the Big Five, a factor that uniformly emerged as the largest in the present nine rotated solutions. The defining JPI scales included Breadth of Interest, Complexity, Innovation, and Tolerance. These variables arguably relate to the intellectual and creative side of the Openness factor, rather than to the side involving culture (see McCrae & John, 1992).

The Jackson Personality Inventory Manual (JPI) is used to capture this construct as innovation, creativity, and initiative have been consistently identified as one of the enduring characteristics of entrepreneurs (as cited in Mueller & Thomas, 2001). Adjectives on the instrument used to describe entrepreneurs which highly correlate with innovativeness include imaginative, inventive, enterprising, original, resourceful, and farsighted (Jackson 1994). A high score on the JPI innovativeness scale indicates a preference for novel solutions to problems and an appreciation for original ideas. Based on the study by Mueller and Thomas (2001), eight items were adapted from the JPI innovativeness scale. These eight items comprise the innovativeness scale (adapted from Jackson Personality Inventory, 1994).

Cultural tightness

This research conceptualizes national culture in the form of cultural tightness as an independent variable. Gelfand et al. (2011) provide an empirical test that shows how ecological, historical, and institutional factors, along with everyday situations and psychological processes, together constitute cultural systems. To measure this, we use the validated and reliable Tightness-Looseness scale of Gelfand et al. (2011). This scale tests the degree to which social norms are penetrated in the minds of the entrepreneurs, clearly defined and reliably imposed within the nation. The final version of the scale includes six statements regarding the clarity and number of social norms, the degree of tolerance for norm violations, and overall compliance with social norms in each nation ($\alpha = .73$). The survey respondents will receive the following instructions: The following statements refer to the USA as a whole. Please indicate whether you agree or disagree with the following statements using the following scale. Note that the statements sometimes refer to "social norms," which are standards for behavior that are generally unwritten. Respondents rated all items on a 6-point scale ranging from strongly disagree to strongly agree.

Control variables

Sexton and Bowman-Upton (1986) show that entrepreneurship students tend to be more innovative than other business administration students. Dew, Read, and Sarasvathy (2009) add to this by saying that novice entrepreneurs with a MBA background show a tendency for causal-based decision-making because of their educational background which trains them to think causal. Thus, the type of study will be controlled in the research. We do this by categorizing entrepreneurs based on their study type following the STEM vs NON-STEM categories that Stienstra (2018) used in his study (See appendix 2). These categorizations are used since the educational background of entrepreneurs in the STEM disciplines have a different understanding of how to come to the new venture creation decision (as cited in Stienstra, 2018).

Also, entrepreneurs that will or have completed a university degree program since educational background seems to matter for innovativeness rates of the entrepreneur will be surveyed. Higher education has found to lead to higher innovativeness of the entrepreneur and therefore the firm (Grégoire, Corbett,

& McMullen, 2011). Five possible levels were provided, ranging from "High School" to "Doctorate or professional degree" Responses were coded from 1 to 5 with higher scores corresponding to higher levels of education attained.

Moreover, the main goal of the entrepreneur seems to matter for the rates of innovation that a person scores. Tuunanen and Hyrsky (1997) found that in both Finnish and American samples of business owners, those who report their primary objectives to be profit and growth scored higher on Jackson's innovativeness measure than did those reporting family income as their primary goal. Therefore, the purpose of the entrepreneur is controlled for and coded as dummy variables. We do this by specifying the dummy variables by profit and growth as the primary objective of the firm, non-profit and socially responsible oriented objectives as the primary objective of the firm, sustain myself (and my family) as the primary objective of the firm, or the category "other".

In the Study by Mueller and Thomas (2001), there is called for a more thorough examination of gender effects across a variety of cultural, economic, and political context. The study observed that innovativeness is more frequently present among males whilst finding of differences between men and women in the likelihood of an entrepreneurial orientation suggests systematic gender differences in motives leading to new venture initiation (as cited in Mueller & Thomas, 2001). Therefore, it is wise to control for the gender as a metric variable to check whether the gender has a significant influence on the outcomes of the research (Female = 0, Male = 1). Finally, also age is controlled for as a scale variable and industry type will be controlled for and recoded into a dummy variable to control for the assumption of the author that these two variables could be of influence on the results. We recode industry type into dummy variables by specifying the dummy variable by primary and secondary industry, business service industry, and the types of industries that could not be put in one of these categories.

3.3. Data analysis

The main goal of the data analysis is to achieve a deeper understanding of the influence that perceived cultural tightness and innovativeness of an entrepreneur have on the application of effectual and causal entrepreneurial processes within a new-venture creation decision of a novice entrepreneur. To achieve this, the results of the questionnaire are

analyzed using IBM SPSS Statistics 23 and IBM SPSS Amos 25. In order to analyze the collected relevant data an exploratory factor analysis was conducted, the scales have been tested on their reliability, methods for hypothesis testing are explained, and basic assumptions for further statistical analysis have been tested.

Exploratory factor analysis

Exploratory factor analysis is conducted due to the call of Alsos et al. (2014) for further development of the measurement scale that measures each of the total of 10 principles that effectuation and causation entail. On top of that, we used the exploratory factor analysis because scholars have suggested that it is interesting to examine how these concepts are related to other antecedent variables (e.g., Perry et al., 2012). This analysis helped to identify if the underlying constructs of cultural tightness, innovativeness and effectuation/causation align with the prescribed theories. If this is the case, hypothesis testing can be done. Before the factor analysis has been done, the author determined whether the data satisfies the necessary requirements for factor analysis. Following this, the negatively worded questions are considered and recoded. Also, based on a sample size of 109 respondents a factor analysis is appropriate (Hair, Anderson, Tatham, & Black, 1995). On top of that, the correlations (i.e., R) between the items should be at least .30 (Tabachnick & Fidell, 2007). In this study, we followed the categorization of Hair et al. (1995) whereby a factor loading of .30 is minimal, .40 important and .50 practically significant. Appendix 5 shows that only part of the items correlates enough within the given scale. However, the determinant in the correlation matrix shows that, with a score of .001, the items are still appropriate to use in a factor analysis. There is also no multicollinearity since there are no variables that have a variance inflation factor (VIF) that exceeds the threshold of five (Hair, Ringle, & Sarstedt, 2011). Using the KMO and Bartlett's test of sphericity determined that factor analysis is appropriate since it exceeds the threshold of .50 and a significant test of sphericity ($P < .05$) (Hair et al., 1995; Tabachnick & Fidell, 2007). Given that all the conditions are met, an exploratory factor analysis seems appropriate.

For the type of analysis, the author follows the study by Pett, Lackey, and Sullivan (2003) who state that principal component analysis should be used for the establishment of preliminary solutions like these.

Following this analysis, the variables innovativeness (three dimensions), cultural tightness (two dimensions), causation (two dimensions) and effectuation (one dimension) together explain a total of 61,67% of the total variance in which seven underlying dimensions represent an eigenvalue of at least one (Kaiser, 1960). Based on the eigenvalue it is estimated that seven factors can be extracted from the data. However, repeated documentation showed the tendency of the eigenvalue to retain too many, and oftentimes far too many, factors (Lance, Butts, & Michels, 2006). On top of that, parallel analysis (PA) is an accurate alternative and is not as difficult to implement as some may think (see Hayton et al., 2004). This parallel analysis shows that there are only four components to be estimated for the factor analysis (see appendix 5). Concluding, the priori assumptions have been met which means that an orthogonal rotation is used in this analysis (Costello & Osborne, 2005). The pattern matrix shows clearly that most items of cultural tightness, innovativeness and effectuation load on the constructs that have been established in the theory which justifies further hypothesis testing. However, several items of causation seem to load on the constructs of innovativeness and cultural tightness.

Scale reliability

Following the factor analysis, the reliability of the applied scales is considered (appendix 7). These reliability values are analyzed to examine to what extent the findings of the analysis can be generalized, and to what extent the measurement scale of Alsos et al. (2014) needs further testing and developing. Given the earlier established reliability based on earlier studies, it is remarkable to see that the scale of causation ($\alpha = .590$) and cultural tightness ($\alpha = .648$) do not comply with the most lenient reliability standard of .65 (Nunnally & Bernstein, 1994). Moreover, the scales of innovativeness ($\alpha = .686$) and effectuation ($\alpha = .722$) do comply with more lenient standards for exploratory analysis. However, given that all scales have a small number of items (fewer than 10) we also calculated the mean inter-item correlation for the items. The mean inter-item correlation values of cultural tightness ($M = .220$), innovativeness ($M = .217$), effectuation ($M = .341$), and causation ($M = .225$) all comply with the by Briggs and Cheek (1986) recommended values ranging from .20 to .40. Overall, reliability could be improved by removing items but because these scales have previously been tested and deemed a valid way to measure given constructs, this

study has kept the item scales the same as the proposed and validated measurement scales from whom it is adopted.

Hypotheses testing

Several methods are identified to test the hypotheses that ultimately theorize a moderated mediation effect. First correlations have been identified to test potential interesting relationships. After that, the hypotheses are tested following a three-step plan that is adopted from Hayes (2015). First, hierarchical multiple regression analysis is used to assess the influence of potential control variables and test the additional importance of one or more independent variables in predicting the dependent variables. Ultimately, the hypotheses involving mediation are either confirmed or rejected by an additional covariance-based SEM (CB-SEM). The indirect effect of the mediator based on bootstrapping is used to assess whether the mediator influences the outcome variable fully, partially or not-significantly. Second, the interaction of cultural tightness and the predictor variable innovativeness measures the moderation effect. Third, if both step one and two are satisfied, the full model including mediating and moderating effect is tested through bootstrapping and interpreting the results by means of significance level and confidence interval. A moderated mediator is identified if the difference between the lower bound and the upper bound of a 95% confidence interval does not contain 0 (Hayes, 2015).

In addition to hierarchical regression analysis, the SEM is used for the structural model assessment since it is deemed to deal better with measurement error than hierarchical regression analysis when analyzing a possible mediator variable (Cheung & Lau, 2008). Current thought in statistical literature is that both possible approaches to SEM (i.e., partial least square and covariance-based SEM) achieved comparable results when the models have good measurement proprieties (Reinartz, Haenlein, & Henseler, 2009). However, since this research tests hypotheses that are drawn from theory, we follow the call of Hair et al. (2011) who recommend CB-SEM in this situation. With a small to medium sample size like in this study, bootstrap methods in SEM are recommended to assess mediation (Efron & Tibshirani, 1993). Among the various mediation tests investigated by Fritz and MacKinnon (2007), the bias-corrected bootstrap was consistently the most powerful causing some analysts to believe it is the first choice among the currently

available mediation tests (e.g., Shrout & Bolger, 2002). Therefore, bias-corrected bootstraps are used for the CB-SEM analysis.

Assumptions for further statistical testing

To further test the described hypotheses, one should first test the assumptions that act as a prerequisite for correlation, regression analysis and SEM. The assumptions that must be met to perform a hierarchical regression analysis are a continuous or categorical level independent variable, continuous level dependent variable independence of observations, linearity of the data, homoscedasticity of residuals, absence of multicollinearity, the absence of outliers, no missing values, and normality of the data. If these assumptions are met, correlation analysis and SEM are also appropriate to conduct. Appendix 8 shows a more elaborate explanation of the tested criteria to examine whether the assumptions for correlation analysis, regression analysis and SEM are fulfilled.

First, the independent variables are, if necessary, transformed into categorical or continuous variables. The dependent variables are also transformed into continuous variables if necessary. Secondly, independence of observations is tested via estimation of the Durban-Watson statistic whereby the values should be between 1.5 and 2.5 for independent observations (Garson, 2012). Given that all variables comply with this norm, it is reasonable to assume that the participating entrepreneurs are independent of one another. Third, there was linearity as assessed by partial regression plots and a plot of studentized residuals against the predicted values. There was also homoscedasticity, as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. Fourth, there is no multicollinearity based on the rule of thumb that Hair et al. (2011) proposed. Also, to avoid potentially problematic high multicollinearity with the interaction term, the variables were centered and an interaction term between cultural tightness and innovativeness was created (Aiken, West, & Reno, 1991). Fifth, based on the outlier labeling rule of Hoaglin, Iglewicz, and Turkey (1986) and the revised multiplier of Hoaglin and Iglewicz (1987), there are no outliers in the data. Based on the assumption of normally distributed data, the highest observation per variable should not exceed the calculated upper bound whilst the lowest observation per variable should not be lower than the lower bound. On top of that, there are no missing values. Finally, to test whether the data is normally

distributed the skewness, kurtosis and Shapiro-Wilk test for normality is evaluated. All variables comply with the given standards for these tests which implies a normally distributed set of variables for this dataset (Garson, 2012).

4. Results

4.1. Descriptive statistics

The correlations among the dependent, independent and control variables are summarized in Table 4 whom demonstrate that the correlation between innovativeness and cultural tightness ($R = .212$, $p < .05$), cultural tightness and causation ($R = .399$, $p < .01$), and between innovativeness and causation ($R = .300$, $p < .01$) are all positive and statistically significant. With regard to the correlation with control variables, study type and perceived cultural tightness are negatively correlated ($R = -.222$, $p < .05$). Also, effectuation is positively correlated with type of business ($R = .192$, $p < .05$), and negatively correlated with education level ($R = -.269$, $p < .01$). Finally, Type of business ($R = -.226$, $p < .05$) and firm objective ($R = .206$, $p < .05$) are both significantly and negatively correlated with causation. Besides that, American novice entrepreneur experiences their culture as tight given a minimum score of 1 and a maximum score of 6, and show high agreeableness given the low standard deviation ($M = 3.76$, $SD = .791$). This tendency is also seen when one interprets scores on innovativeness based on a scale that has a minimum of 1 and a maximum score of 5 ($M = 3.49$, $SD = .403$). Also, novice entrepreneurs score remarkably high on the

notion of causation ($M = 5.09$, $SD = .858$) whilst effectuation ($M = 3.99$, $SD = 1.154$) is also above average based on a Likert scale from 1 till 7.

When further diving into the descriptive statistics shown in table 5 it is shown that the average score of cultural tightness is decreased by the reverse coded question that measured the “freedom in deciding how to act”. This items also has a higher standard deviation than other cultural tightness items which implies lower agreeableness on this item ($M = 2.50$, $SD = 1.412$). On top of that, another pattern can be identified for innovativeness where questions that presented a trade-off choice, being “new ideas rather than skill” ($M = 3.17$, $SD = 1.053$) and “inventiveness over skill in a job” ($M = 3.50$, $SD = .939$), scored lower than those who did not.

Table 4
Correlations of dependent, independent, and control variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Effectuation	1									
2. Causation	-.12	1								
3. Innovativeness	.089	.300**	1							
4. Cultural Tightness	.06	.399**	.212*	1						
Control variables										
5. Age	-.128	.015	.045	-.056	1					
6. Gender	.101	-.096	.057	-.16	-.026	1				
7. Study type	.084	-.082	.007	-.222*	0	.264**	1			
8. Education Level Completed	-.269**	.035	-.033	-.014	.609**	-.006	-.111	1		
9. Firm objective	.022	.206*	.112	-.078	.009	-.036	.078	.024	1	
10. Industry type	.192*	-.226*	-.054	-.169	.043	.088	.448**	-.281**	.03	1

Note. $N = 109$. * $p < .05$, ** $p < .01$. (Sig. 2-tailed)

Table 5
Minimum, maximum, means and standard deviations of measured variables
Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
Cultural Tightness	1.33	5.67	3.76	.791
Many social Norms on behavior	1	6	4.40	1.256
Clear expectations how to act	1	6	4.06	1.339
Agreeableness on appropriate behavior	1	6	3.91	1.316
No freedom in deciding how to act	1	6	2.50	1.412
Disapproval inappropriate behavior	1	6	4.13	1.299
Must comply with social norms	1	6	3.56	1.258
Innovativeness	2.50	4.50	3.49	.403
Novel ideas	1	5	3.94	.936
Asked to help with creative activities	1	5	3.97	.986
New ideas rather than skill	1	5	3.17	1.053
Preference for original thinking in work	1	5	4.25	.830
Not continuing work the same as taught	2	5	3.85	.941
Inventiveness over skill in a job	1	5	3.50	.939
I am very creative	1	5	4.29	.885
Experimenting in doing the same thing	1	5	3.98	.892
Causation	3.20	7.00	5.09	.858
Item 1	2	7	5.62	1.238
Item 2	1	7	5.21	1.552
Item 3	1	7	3.83	1.527
Item 4	2	7	5.72	1.239
Item 5	2	7	5.06	1.383
Effectuation	1.40	6.40	3.99	1.154
Item 1	1	7	3.74	1.873
Item 2	1	7	4.33	1.558
Item 3	2	7	4.79	1.510
Item 4	1	7	3.90	1.633
Item 5	1	7	3.20	1.784

4.2. Hypothesis testing

A hierarchical multiple regression or SEM is performed separately for every hypothesis. Overall, we conducted seven separate hierarchical multiple regressions and we performed two SEM's in order to find simple linear relations between the variables. Results of the hierarchical multiple regressions and SEMs to test the various hypotheses can be found in the various tables referring to the specific hypothesis.

Hypothesis 1a (H1a): *Tight perceived culture has a negative effect on the usage of effectuation-based new venture creation decisions.*

A hierarchical multiple regression was run to determine if the addition of cultural tightness improved the prediction of effectuation-based new venture creation decisions (see table 6). The full model of the control variables and cultural tightness to predict effectuation (model 2) was not statistically significant, $R^2 = .107$, $F(10, 98) = 1.175$, $p > .05$; adjusted $R^2 = .016$. The addition of cultural tightness to the prediction of effectuation (Model 2) led to a statistically non-significant increase in R^2 of .009, $F(1, 98) = 1.020$, $p > .05$. The hierarchical regression analysis also revealed that perceived tightness of the societal culture has no significant effect on the use of the effectuation

decision-making approach ($\beta = .101$, $p > .05$). Thus, there is no clear direction towards the use of effectuation when the culture is perceived as tight and there not enough evidence to reject the null-hypothesis.

Hypothesis 1b (H1b): *Tight perceived culture has a positive effect on the usage of causation-based new venture creation decisions.*

In order to determine if the addition of cultural tightness improved the prediction of causation-based new venture creation decisions, another hierarchical multiple regression was executed (see table 6). The full model of the control variables and cultural tightness to predict causation (model 2) was statistically significant, $R^2 = .274$, $F(10, 98) = 3.699$, $p < .01$; adjusted $R^2 = .200$. The addition of cultural tightness to the prediction of effectuation (Model 2) led to a statistically significant increase in R^2 of .137, $F(1, 98) = 18.499$, $p < .01$. The hierarchical regression analysis also revealed that perceived tightness of the societal culture has a significant and positive effect on the use of the causation decision-making approach ($\beta = .388$, $p < .01$). Thus, there is a clear direction towards the use of causation when the culture is perceived as tight and there is enough evidence to reject the null-hypothesis.

Table 6
Hierarchical multiple regression predicting effectuation and causation from cultural tightness

Variable	Effectuation (H1a)				Causation (H1b)				
	Model 1		Model 2		Model 1		Model 2		
	β	T	β	T	β	T	β	T	
Constant		4.979		3.723		7.205**		4.427**	
Age	.018	.140	.021	.164	.063	.503	.075	.648	
Gender	.105	1.029	.117	1.145	-.060	-.603	-.012	-.126	
Study type	-.027	-.236	-.014	-.122	.054	.484	.104	1.001	
Study level	-.243	-1.821	-.239	-1.795	-.054	-.415	-.041	-.338	
<u>Objective of firm</u>									
Profit and growth	-.047	-.222	-.045	-.214	-.499*	-2.416	-.493*	-2.588	
Non-profit and socially responsible oriented	-.054	-.300	-.048	-.267	-.426*	-2.420	-.404*	-2.483	
To sustain myself (and family)	-.002	.012	.015	.083	-.243	-1.414	-.195	-1.227	
<u>Industry type</u>									
Primary and secondary industry	-.246	-1.030	-.276	-1.147	.473*	2.024	.357	1.645	
Business service industry	-.147	-.663	-.175	-.783	.322	1.487	.215	1.069	
Cultural tightness			.101	1.010			.388**	4.301	
<u>Model summary</u>									
R2	.098		.107		.137		.274		
F	1.192		1.175		1.746		3.699**		
ΔR^2	.098		.009		.137		.137		
ΔF	1.192		1.020		1.746		18.499**		

Note. $N = 109$. * $p < .05$, ** $p < .01$. (Sig. 2-tailed)

Hypothesis 2a (H2a): *High innovativeness has a positive effect on the use of effectuation-based new venture creation decisions.*

A hierarchical multiple regression was run to determine if the addition of innovativeness increases the prediction of effectuation (see table 7). The full model of the control variables and innovativeness to predict effectuation (model 2) was not statistically significant, $R^2 = .104$, $F(10, 98) = 1.133$, $p > .05$; adjusted $R^2 = .012$. The addition of innovativeness to the prediction of effectuation-based new venture creation decisions (Model 2) led to a statistically non-significant increase in R^2 of $.006$, $F(1, 98) = .640$, $p > .05$. The hierarchical regression analysis for the effectuation approach indicates that there is no statistically significant relation between innovativeness of an entrepreneur and the effectuation approach ($\beta = .079$, $p > .05$). Thus, there is no clear direction towards the use of effectuation when the entrepreneur perceives himself as innovative, and there is not enough evidence to reject the null-hypothesis.

Hypothesis 2b (H2b): *High innovativeness has a negative effect on the use of causation-based new venture creation decisions.*

The decrease in the prediction of causation of an entrepreneur when innovativeness was added to the model was determined by a hierarchical multiple regression (see table 7). The full model of the control variables and innovativeness to predict causation (model 2) was statistically significant, $R^2 = .195$, $F(10, 98) = 2.372$, $p < .05$; adjusted $R^2 = .113$. The addition of innovativeness to the prediction of causation-based new venture creation decisions (Model 2) led to a statistically significant increase in R^2 of $.058$, $F(1, 98) = 7.047$, $p < .01$. In addition to this, the hierarchical regression analysis for the causation approach indicates that there is a statistically significant positive relation between innovativeness of an entrepreneur and the causation approach ($\beta = .249$, $p < .01$). Thus, there is a clear direction towards the use of causation when the entrepreneur perceives himself as innovative. However, based on the theory the opposite was hypothesized and therefore there is not enough evidence to reject the null-hypothesis.

Table 7
Hierarchical multiple regression predicting effectuation and causation from innovativeness

Variable	Effectuation (H2a)				Causation (H2b)				
	Model 1		Model 2		Model 1		Model 2		
	β	T	β	T	β	T	β	T	
Constant		4.979**		3.061**		7.205**		3.567**	
Age	.018	.140	.007	.051	.063	.503	.027	.223	
Gender	.105	1.029	.099	.964	-.060	-.603	-.080	-.820	
Study type	-.027	-.236	-.029	-.248	.054	.484	.050	.456	
Study level	-.243	-1.821	-.233	-1.743	-.054	-.415	-.025	-.198	
<u>Objective of firm</u>									
Profit and growth	-.047	-.222	-.027	-.126	-.499*	-2.416	-.436*	-2.162	
Non-profit and socially responsible oriented	-.054	-.300	-.031	-.168	-.426*	-2.420	-.353*	-2.039	
To sustain myself (and family)	-.002	.012	.008	.047	-.243	-1.414	-.223	-1.338	
<u>Industry type</u>									
Primary and secondary industry	-.246	-1.030	-.264	-1.098	.473*	2.024	.416	1.828	
Business service industry	-.147	-.663	-.163	-.733	.322	1.487	.270	1.279	
Innovativeness			.079	.800			.249**	2.655	
<u>Model summary</u>									
R2	.098		.104		.137		.195		
F	1.192		1.133		1.746		2.372*		
ΔR^2	.098		.006		.137		.058		
ΔF	1.192		.640		1.746		7.047**		

Note. $N = 109$. * $p < .05$, ** $p < .01$. (Sig. 2-tailed)

Hypothesis 3 (H3): *Tight perceived culture has a negative influence on the innovativeness of an entrepreneur.*

A hierarchical multiple regression was run to determine if the addition of cultural tightness decreases the prediction of innovativeness of an entrepreneur (see table 8). The full model of the control variables and cultural tightness to predict innovativeness (model 2) was not statistically significant, $R^2 = .115$, $F(10, 98) = 1.269$, $p > .05$; adjusted $R^2 = .024$. The addition of cultural tightness to the prediction of innovativeness (Model 2) led to a statistically significant increase in R^2 of .049, $F(1, 98) = 5.454$, $p < .05$. The hierarchical regression analysis for the innovativeness trait indicates that there is a statistically significant positive relationship between the perceived tightness of the culture that the entrepreneur lives in and the innovativeness of an entrepreneur ($\beta = .233$, $p < .05$). Thus, there is a clear direction towards the innovativeness trait when the entrepreneur perceives the culture he lives in as tight. However, based on the theory the opposite was hypothesized and therefore there is not enough evidence to reject the null-hypothesis.

Hypothesis 4a (H4a): *Innovativeness mediates the expected negative direct effect of cultural tightness on effectuation.*

A SEM was tested to determine if the addition of innovativeness mediates the expected negative direct effect of cultural tightness on effectuation of an entrepreneur (see table 9). The full model of control variables, cultural tightness and innovativeness to predict effectuation (model 3) explained 13 percent of its variance ($R^2 = .130$).

Moreover, in order to confirm innovativeness as a mediating variable and its significance in the model, we test both full and partial mediation. For full mediation, the SEM must show that while the mediator is caused by cultural tightness and is a cause of effectuation, the perceived cultural tightness loses its significance when the mediator is included in the model. For partial mediation, the regression results must show that the indirect effect of cultural tightness via innovativeness on effectuation is statistically significant. First, there is no significant effect of cultural tightness on effectuation ($\beta = .101$, $p > .05$). Second, cultural tightness does have a significant

Table 8
Hierarchical multiple regression predicting innovativeness from cultural tightness

Variable	Innovativeness (H3)			
	Model 1		Model 2	
	β	T	β	T
Constant		9.413**		6.993**
Age	.143	1.100	.150	1.180
Gender	.078	.752	.107	1.048
Study type	.019	.159	.048	.421
Study level	-1.116	-8.59	-.108	-.817
<u>Objective of firm</u>				
Profit and growth	-.251	-1.170	-.248	-1.178
Non-profit and socially responsible oriented	-.293	-1.600	-.280	-1.558
To sustain myself (and family)	-.079	-.439	-.050	-.284
<u>Industry type</u>				
Primary and secondary industry	.226	.931	.157	.655
Business service industry	.208	.925	.144	.650
Cultural tightness			.233*	2.335
<u>Model summary</u>				
R2	.065		.115	
F	.769		1.269	
ΔR^2	.065		.049	
ΔF	.769		5.454*	

Note. $N = 109$. * $p < .05$, ** $p < .01$. (Sig. 2-tailed)

positive effect on innovativeness ($\beta = .233, p < .05$, see table 8). Thirdly, innovativeness does not have a significant effect on effectuation including cultural tightness in the model ($\beta = .089, p > .05$). In addition, cultural tightness also does not have a significant effect on effectuation including innovativeness in the model ($\beta = .149, p > .05$). This indicates that there is no full mediation. On top of that, following a non-significant indirect effect, innovativeness does not partially mediate the effect of cultural tightness on effectuation ($\beta = .019, p > .05$). Therefore, there is enough evidence to reject the null-hypothesis.

Hypothesis 4b (H4b): *Innovativeness mediates the expected positive direct effect of cultural tightness on causation.*

An additional SEM was tested to determine if the addition of innovativeness mediates the expected positive direct effect of cultural tightness on causation (see table 9). The full model of the control variables and innovativeness to predict causation (model 3) explained 29.6 percent of its variance ($R^2 = .296$).

On top of that, in order to confirm innovativeness as a mediating variable and its significance in the model, we test both full and partial mediation. For full

mediation, the SEM must show that while the mediator is caused by cultural tightness and is a cause of the causation, the perceived cultural tightness loses its significance when the mediator is included in the model. For partial mediation, the regression results must show that the indirect effect of cultural tightness via innovativeness on causation is statistically significant. First, cultural tightness has a significant positive effect on causation ($\beta = .388, p < .01$). Second, cultural tightness also has a significant positive effect on the use of innovativeness ($\beta = .233, p < .05$, see table 8). Thirdly, innovativeness does not have a significant effect on causation including cultural tightness in the model ($\beta = .179, p > .05$). Fourth, cultural tightness does have a significant effect on causation including innovativeness in the model ($\beta = .362, p < .01$). This indicates that there is no full mediation. However, following a significant indirect effect, innovativeness partially mediates the effect of cultural tightness on causation ($\beta = .037, p < .05$). Therefore, there is enough evidence to reject the null-hypothesis.

Table 9
SEM predicting the mediating effect of innovativeness on the relationship between cultural tightness and both effectuation and causation

Variable	Effectuation (H4a)			Causation (H4b)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	β	β	β	β	β	β
Constant						
Age	.018	.021	.021	.063	.075	.051
Gender	.105	.117	.104	-.060	-.012	-.014
Study type	-.027	-.014	.001	.054	.104	.094
Study level	-.243	-.239	-.233	-.054	-.041	-.056
<u>Objective of firm</u>						
Profit and growth	-.047	-.045	-.112	-.499*	-.493*	-.456**
Non-profit and socially responsible oriented	-.054	-.048	-.096	-.426*	-.404*	-.361*
To sustain myself (and family)	-.002	.015	-.017	-.243	-.195	-.184
<u>Industry type</u>						
Primary and secondary industry	-.246	-.276	-.220	.473*	.357	.289
Business service industry	-.147	-.175	-.145	.322	.215	.164
Cultural tightness		.101	.149		.388**	.362**
Innovativeness			.089			.179
Indirect effect cultural tightness			.019			.037*
<u>Model summary</u>						
R^2		.107	.130			.296

Note. $N = 109$. * $p < .05$, ** $p < .01$. (Sig. 2-tailed)

Hypothesis 5a (H5a): *Cultural tightness fully moderates expected positive effect of innovativeness on effectuation.*

A hierarchical multiple regression was run to determine if the addition of cultural tightness fully moderates the expected positive effect of innovativeness on effectuation-based new venture creation decisions (see table 10). The full model of the control variables, the centered variables of cultural tightness and innovativeness and the interaction term cultural tightness to predict effectuation (model 3) was not statistically significant, $R^2 = .123$, $F(12, 96) = 1.118$, $p > .05$; adjusted $R^2 = .013$. The addition of the centered variables cultural tightness and innovativeness to the prediction of effectuation (Model 2) led to a statistically insignificant increase in R^2 of $.012$, $F(2, 97) = .677$, $p > .05$. The addition of cultural tightness as a moderator to the prediction of effectuation (Model 3) led to a statistically non-significant increase in R^2 of $.012$, $F(1, 96) = 1.366$, $p > .05$.

The moderator effect shows a positive regression coefficient which indicates that a higher perceived cultural tightness strengthens the influence of innovativeness on effectuation ($\beta = .123$). However, the regression analysis is not significant which means that there is no significant moderating effect of cultural tightness on the relationship between innovativeness and effectuation ($P > .05$). Therefore, there is not enough evidence to reject the null-hypotheses.

Hypothesis 5b (H5b): *Cultural tightness fully moderates the expected negative effect of innovativeness on causation.*

A hierarchical multiple regression was run to determine if the addition of cultural tightness fully moderates the expected negative effect of innovativeness on causation-based new venture creation decisions (see table 11). The full model of the control variables and moderator variable cultural tightness to predict causation (model 3) was statistically significant, $R^2 = .304$, $F(12, 96) = 3.486$, $p < .01$; adjusted $R^2 = .214$. The addition of the centered variables cultural tightness and innovativeness to the prediction of causation (Model 2) led to a statistically significant increase in R^2 of $.163$, $F(2, 97) = 11.260$, $p < .01$. However, the addition of cultural tightness as an interaction variable to the prediction of causation (Model 3) led to a statistically non-significant increase in R^2 of $.004$, $F(1, 96) = .545$, $p > .05$.

The moderator effect shows a positive regression coefficient which indicates that a higher perceived cultural tightness strengthens the coherence between innovativeness and causation ($\beta = .069$). However, the regression analysis is not significant which means that there is no significant moderating effect of cultural tightness on the relationship between innovativeness and causation ($P > .05$). Therefore, there is not enough evidence to reject the null-hypotheses.

Table 10
Hierarchical multiple regression predicting effectuation moderated by cultural tightness

Variable	Effectuation (H5a)					
	Model 1		Model 2		Model 3	
	β	T	β	T	β	T
Constant		4.979**		4.921**		4.685**
Age	.018	.140	.012	.094	.010	.077
Gender	.105	1.029	.111	1.073	.113	1.093
Study type	-.027	-.236	-.017	-.146	-.019	-.168
Study level	-.243	-1.821	-.233	-1.735	-.239	-1.785
<u>Objective of firm</u>						
Profit and growth	-.047	-.222	-.030	-.143	-.003	-.015
Non-profit and socially responsible oriented	-.054	-.300	-.031	-.172	-.006	-.031
To sustain myself (and family)	-.002	.012	.018	.099	.048	.266
<u>Industry type</u>						
Primary and secondary industry	-.246	-1.030	-.285	-1.180	-.230	-.934
Business service industry	-.147	-.663	-.183	-.817	-.137	-.602
Centered cultural tightness			.087	.846	.123	1.169
Centered innovativeness			.059	.583	.114	1.078
Moderator effect cultural tightness					.084	.778
<u>Model summary</u>						
R2	.098		.110		.123	
F	1.192		1.092		1.118	
ΔR^2	.098		.012		.012	
ΔF	1.192		.677		1.366	

Note. N = 109. *p < .05, **p < .01. (Sig. 2-tailed)

Table 11
Hierarchical multiple regression predicting causation moderated by cultural tightness

Variable	Causation (h5b)					
	Model 1		Model 2		Model 3	
	β	T	β	T	β	T
Constant		7.205**		7.745**		7.514**
Age	.063	.503	.049	.429	.048	.417
Gender	-.060	-.603	-.030	-.325	-.029	-.313
Study type	.054	.484	.096	.933	.095	.917
Study level	-.054	-.415	-.022	-.187	-.026	-.217
<u>Objective of firm</u>						
Profit and growth	-.499*	-2.416	-.451*	-2.381	-.435*	-2.281
Non-profit and socially responsible oriented	-.426*	-2.420	-.356*	-2.192	-.342*	-2.082
To sustain myself (and family)	-.243	-1.414	-.186	-1.189	-.170	-1.067
<u>Industry type</u>						
Primary and secondary industry	.473*	2.024	.330	1.539	.362	1.649
Business service industry	.322	1.487	.191	.957	.217	1.069
Centered cultural tightness			.349**	3.808	.069	.739
Centered innovativeness			.170	1.882	.364**	3.869
Moderator effect cultural tightness					.183	1.983
<u>Model summary</u>						
R2	.137		.300		.304	
F	1.746		3.771**		3.486**	
ΔR^2	.137		.163		.004	
ΔF	1.746		11.260**		.545	

Note. N = 109. *p < .05, **p < .01. (Sig. 2-tailed)

4.3. Additional findings

Apart from the tested hypotheses the data also resulted in various additional findings. These findings contain the influence of the identified control variables on the use of effectuation and causation, cultural tightness as a mediator on the relationship between innovativeness and the use of causation, and the difference in use of effectuation compared to causation by novice entrepreneurs.

The influence of control variables on effectuation and causation

Based on the hierarchical multiple regression of table 6 we also determine if the identified control variables of age, gender, study type, study level, firm objective and industry type of the firm have a predictive value for the use of effectuation and causation.

The full model of the control variables to predict effectuation (model 1) was not statistically significant, $R^2 = .098$, $F(9, 99) = 1.192$, $p > .05$; adjusted $R^2 = .016$. The hierarchical regression analysis also revealed that the control variables of age ($\beta = .018$, $p > .05$), gender ($\beta = .105$, $p > .05$), study type ($\beta = -.027$, $p > .05$), study level ($\beta = -.243$, $p > .05$), profit and growth as primary objective of the firm ($\beta = -.047$, $p > .05$), non-profit and socially responsible goals as primary objective of the firm ($\beta = -.054$, $p > .05$), sustaining myself (and family) as primary objective of the firm ($\beta = .002$, $p > .05$), primary and secondary industry type ($\beta = -.246$, $p > .05$), and service oriented industry type ($\beta = -.147$, $p > .05$) all do not have a significant effect on the use of effectuation

The full model of the control variables to predict causation (model 1) was not statistically significant, $R^2 = .137$, $F(9, 99) = 1.746$, $p > .05$; adjusted $R^2 = .058$. The hierarchical regression analysis also revealed that the control variables of age ($\beta = .063$, $p > .05$), gender ($\beta = -.060$, $p > .05$), study type ($\beta = .054$, $p > .05$), study level ($\beta = -.054$, $p > .05$), sustaining myself (and family) as primary objective of the firm ($\beta = -.243$, $p > .05$), and service oriented industry type ($\beta = .322$, $p > .05$) all do not have a significant effect on the use of causation. However, profit and growth as primary objective of the firm ($\beta = -.499$, $p < .05$), non-profit and socially responsible goals as primary objective of the firm ($\beta = -.426$, $p < .05$), and primary and secondary industry type ($\beta = -.473$, $p < .05$) all have a statistically significant effect on the use of causation.

Cultural tightness acting as a mediator on the relationship between innovativeness and the use of causation

Attesting to innovativeness being a trait that every entrepreneur possesses independently of culture (Mueller & Thomas, 2011), we test an alternative explanation whereby the innovativeness trait precedes cultural tightness and influences the way that an entrepreneur perceives culture. A SEM was conducted to determine if the addition of cultural tightness mediates the expected negative effect of innovativeness on causation of an entrepreneur (see table 12). The full model of the control variables and innovativeness to predict causation explained 30.2 percent of its variance ($R^2 = .302$).

Moreover, in order to confirm cultural tightness as a mediating variable and its significance in the model, the regression results must show that while the mediator is caused by innovativeness and causes causation, the perceived innovativeness loses its significance when the mediator is included in the model. First, innovativeness has a significant positive influence on the use of causation ($\beta = .249$, $p < .01$). Second, innovativeness has a significant positive influence on cultural tightness ($\beta = .212$, $p < .05$). Thirdly, cultural tightness does have a significant positive effect on the use of causation including innovativeness in the model ($\beta = .362$, $p < .01$). In addition, innovativeness does not have a significant effect on causation including cultural tightness in the model ($\beta = .179$, $p > .05$). Thus, cultural tightness fully mediates the relationship between innovativeness and causation.

The use of effectuation compared to causation

With reference to Sarasvathy (2001), effectuation is primarily used by expert entrepreneurs whilst causation is more often used by novice entrepreneurs. To identify this, a paired sample t-test was executed to determine whether there was a statistically significant mean difference between the use of causation compared to the use of effectuation for novice entrepreneurs. The data was free of outliers and the assumption of normality was not violated, as assessed in appendix 8. Overall, novice entrepreneurs show a tendency to use a causation-based decision style ($M = 5.090$, $SD = .858$) as opposed to an effectuation-based approach ($M = 3.993$, $SD = 1.154$), a statistically

significant mean increase of 1.097, 95% CI [.809, 1.386], $t(108) = 7.544$, $p < .001$, $d = .726$. Furthermore, only the sub-construct of exploiting pre-existing knowledge ($M = 3.83$, $SD = 1.527$) versus exploiting contingencies ($M = 4.79$, $SD = 1.510$) favors the effectuation approach for the novice entrepreneurs indicating a statistically significant mean decrease of $-.963$, 95% CI [-1.408, $-.519$], $t(108) = -4.296$, $p < .001$, $d = -.411$. All the other sub-construct indicated a preference for causation-based decision-making. Further tested on the other sub-constructs it can be found that all the specific sub-constructs have a

significant difference in mean (see table 13). However, following the research of Cohen (1992) the effect size should be at least .80 to have a large practical significance. Only the sub-construct of competitive analysis versus alliances & pre-commitments complies to this rule of thumb. Therefore, there is a statistically significant difference between the use of effectuation versus causation, but large practical significance is not fully proven by the results.

Table 12
SEM predicting the mediating effect of cultural tightness on the relationship between innovativeness and causation

Variable	Cultural tightness		Causation		
	Model 1	Model 2	Model 1	Model 2	Model 3
	β	β	β	β	β
Constant					
Age	-.030	-.063	.063	.027	.051
Gender	-.125	-.142	-.060	-.080	-.014
Study type	-.128	-.133	.054	.050	.093
Study level	-.035	-.008	-.054	-.025	-.056
<u>Objective of firm</u>					
Profit and growth	-.016	.008	-.499*	-.436*	-.453**
Non-profit and socially responsible oriented	-.059	.041	-.426*	-.353*	-.359*
To sustain myself (and family)	-.124	.008	-.243	-.223	-.183
<u>Industry type</u>					
Primary and secondary industry	.298	-.106	.473*	.416	.288
Business service industry	.275	.246	.322	.270	.163
Innovativeness		.212*		.249**	.179
Cultural tightness					.362**
Indirect effect innovativeness					.077*
<u>Model summary</u>					
R ²	.091	.139		.195	.302

Note. $N = 109$. * $p < .05$, ** $p < .01$. (Sig. 2-tailed)

Table 13
Paired sample t-test assessing the difference between effectuation compared to causation

	Mean difference	Std. Deviation	Effect size (d)	Std. Error mean	95% CI of the difference		T	Df
					Lower	Upper		
					Causation – Effectuation	1.097**		
CA1 – EF1	1.881**	2.527	.744	.242	1.401	2.360	7.771	108
CA2 – EF2	.881**	2.296	.384	.220	.445	1.317	4.004	108
CA3 – EF3	-.963**	2.341	-.411	.224	-1.408	-.519	-4.296	108
CA4 – EF4	1.826**	2.094	.872	.201	1.428	2.223	9.101	108
CA5 – EF5	1.862**	2.496	.746	.239	1.388	2.336	7.789	108

Note. $N = 109$. * $p < .05$, ** $p < .01$. (Sig. 2-tailed)

5. Discussion

This study assesses the current criticism regarding the lack of empirical evidence on differences with comparison groups (e.g., causation), the lack of antecedent variables of effectuation, the disagreement in the literature on the influence of culture on effectuation, and validity problems of measurement scales on effectuation. We argue that cultural tightness and innovativeness are important antecedent variables whilst causation is a valuable comparison group. We find strong support for the relation between profit and growth as the primary objective of the firm, non-profit and socially responsible oriented as the primary objective of the firm, primary and secondary industry as industry type, cultural tightness and innovativeness on causation. Apart from directly affecting causation, innovativeness and cultural tightness act as mediators whereby cultural tightness fully mediates the positive effect of innovativeness on the usage of causation and innovativeness partially mediates the positive effect of cultural tightness on causation. On the contrary, we do not find any proof for the fact that effectuation is related to the identified control variables, cultural tightness and innovativeness. On top of that, we find a significant difference in mean scores of causation compared to effectuation. Thus, our results show differences in antecedent variables and mean score between effectuation and causation. However, while measurement properties of effectuation seem acceptable, we find questionable reliability and validity on the measurement scale of causation.

5.1. Theoretical contribution

This study contributes to the current body of literature in several ways. Until now, expert entrepreneurs are mainly linked to effectuation whilst novice entrepreneurs are primarily linked to causation (e.g., Dew et al., 2009; Sarasvathy, 2001, 2009). In later research, Arend et al. (2015) formulated a call for more comparison pieces to effectuation so that different assumptions, mechanics, trade-offs, and outcomes of effectuation in relation to other entrepreneurship theories (e.g., causation) and any potential downsides of effectuation can be better understood. On top of that, there also seems to be a lack of clarity on antecedent variables and a disagreement about the role that culture plays in this matter (Arend et al., 2015; Gartner, 1985, Hayton et al., 2002; Mitchell et al., 2000; Sarasvathy et al., 2008, 2014). Therefore, conducting research on novice entrepreneurs whereby the influence of cultural tightness is assessed on the relationship between

innovativeness and both effectuation and causation-based decision-making helps to deepen our understanding of effectuation theory and can be considered a cautious step towards developing it to an actual theory. These contributions are elaborated on in fivefold.

Firstly, in a sample composed of novice entrepreneurs, we find that these entrepreneurs have a significantly stronger tendency to make decisions in a causal manner instead of an effectual way. This adds to the theory of Sarasvathy (2001) who states that expert entrepreneurs tend to make decisions in an effectual manner while novice entrepreneurs tend to make decisions in a causal way. Moreover, given the current critique on the linkage between expert entrepreneurs and effectuation on the grounds of different explanations like age, study level and pre-revenue stage of their ventures (e.g., Baron, 2009; Fischer & Reuber, 2011), this study provides a comparison group of novice entrepreneurs that are controlled for age, study level and the official registration of their firm. Accounting for this, this study adds to the current body of knowledge in terms of identifying the influence of a dataset of novice entrepreneurs on the use of effectuation compared to causation and can form a basis for other scholars to further theorize on the differences between the two concepts.

Secondly, identification of antecedent variables has been lacking in current effectuation research (Arend et al., 2015). This research contributes to this body of knowledge by identifying innovativeness and cultural tightness as predictors of causation whilst any relationship towards effectuation was rejected. Despite the call for antecedent variables in the effectuation theory the exclusion of innovativeness and cultural tightness as antecedent variables has considerable theoretical value since this further confirms the relationship that effectuation and causation are expected to have as different strategies (Alsos et al., 2014). Moreover, given the negatively correlated construct assumptions, one should expect no similar effects of latent variables on both effectuation and causation. Confirming this assumption, this study provides current theory with an extension of antecedent variables and paths to the effectuation theory. On top of that, the present study adds to complexity and understanding of the causation concept. Until now, scholars have primarily theorized that culture influences the innovativeness trait (e.g., Segall et al., 1998; Triandis, 2018), however the

present study sheds new light on this matter. With the establishment of both innovativeness and cultural tightness mediating each other in relation to causation, it further deepens our understanding of the relation between these three variables. While causality was earlier assumed, scholars should now consider a more complex model. This is further confirmed by the results who indicate that following the rule of thumb of Hair et al. (2011), causation moderately explained by the antecedent variables suggesting that there are additional variables that can explain the relationship better.

Thirdly, this study contributes to the effectuation literature by adding empirical evidence to the current state of literature regarding its relationship towards cultural tightness. Several researchers have favored culture as an influence on the new venture creation decision (e.g., Hayton et al., 2002; Mitchell et al., 2000). However, only recently scholars have begun to make the connection of culture with effectuation and causation (e.g., Laskovaia et al., 2017; Stienstra et al., 2012). These scholars adverse the initial proposition of Sarasvathy et al. (2008; 2014) who claim that culture does not influence effectuation. This study adds to the ongoing discussion providing empirical evidence that perceived cultural tightness has a positive effect on causation-based new venture creation decisions whilst effectuation is not affected.

Fourth, Alsos et al. (2014) explained that previous measurement scales, who use the conceptualizations that are suggested by Sarasvathy (2001) and Venkataraman and Sarasvathy (2001) are hampering with important validity problems. Drawing inference from this statement, one can argue that current literature is in need of more empirical testing on alternative effectuation and causation scales like the Alsos et al. (2014) scale. Following this logic, we add to the current literature by providing empirical evidence and reported reliability and validity of the alternative effectuation and causation measurement scale.

Finally, with regard to the data collection, another modest contribution is made. We used data collected from 156 individuals which have a non-equal distribution over 13 different states in the USA. With a rate of 26% of the total states of the USA covered the study does a representable job capturing the whole of the USA. We are aware that not all states of the USA are presented in this study but a response rate of 19% and the inability to visit all states in the given

timeframe and personally persuade entrepreneurs to participate in the research are deemed valid reasons for not further broadening the geographical scope of this research within the USA. Thus, this study makes a small contribution to the geographical diversity and quantity of empirical data in the USA with regard to effectuation, causation, innovativeness and cultural tightness.

5.2. Practical implications

The results of this study have implications for entrepreneurs that are faced with difficult decisions every day. More specifically, given that there is still a growing rate of entrepreneurs that turn to entrepreneurship as their main source of income (GEM, 2018) and the increased level of intra-national differences in culture worldwide (Tung & Verbeke, 2010), this study has considerable practical value for entrepreneurs both in the USA and worldwide that start their own business. However, at present in the effectuation literature, the exact characteristics of the uncertainties faced by the entrepreneur, the embodiments of the resources, the nature of the contingencies, and the reaction functions of the identifiable parties involved all remain underspecified (Arend et al., 2015).

For entrepreneurs in the USA. Given that this research is conducted in the USA, the author has some practical implications for the entrepreneurs in the USA. During the data collection, the author had the opportunity to hold long and insightful talks with entrepreneurs during networking events or one-on-one meetings. These talks give a strong implication that the act of how they created a new venture depends on a whole range of different variables that are not measured in this research. First, during these talks, the regulations of the state in which they have established their firm were brought up multiple times. It does not only seem to matter for these entrepreneurs where they want to settle their business, when they wanted to register their firm, but also the type of business they want to incorporate considering different subsidy schemes in various states within the USA. Thus, the American Entrepreneur should look into the different types of regulations and subsidy schemes in order to decide whether they will let these conditions lead the geographical location in which they will pursue their business, or develop their business based on the current regulations and experiment with different possibilities that lie within that. Second, entrepreneurs also mentioned that they strongly consider the resources in

terms of the investment climate and available clusters in the area (e.g., Silicon Valley) when they decide to form a new venture. Again, this puts them for the choice whether they decide to find the right resources for their firm or whether they work with the available resources that are in play in the given region. This is especially shown in the, as the entrepreneurs put it, distinction between “innovation-driven and lifestyle companies”. Multiple entrepreneurs from clusters like Silicon Valley do not originate from California but come to this region because the innovation-driven company that they lead require a specific set of resources that are not available in the region that they were previously operating. Thus, entrepreneurs in the USA should look at the distinction between innovation-driven and lifestyle company to decide how they tackle the sub-construct of resources within the effectuation theory. Third, the results indicated a tendency of novice entrepreneurs to be above highly innovative ($M = 3.489$, $\max. = 5$, $SD = .403$) which is supported by scholars who deemed innovation as an essential trait to process as an entrepreneur (GEM, 2018; Hurley & Hult, 1998; Porter, 1990). However, one can see that the entrepreneur scores lower on innovativeness when he is represented with a trade-off choice of choosing innovativeness over skill. Therefore, awareness of the fact that this can indicate that underlying assumptions of the entrepreneurs about the importance of skills and about the type of work that they tend to be involved in can affect their innovativeness and converting this to innovative behavior.

Also, it is of practical significance to indicate which type of decision-making style (effectuation or causation) is more suited for novice entrepreneurs. First, results indicate a significantly higher use of causation compared to effectuation. On top of that, the author had the opportunity to talk to some novice entrepreneurs that took the survey and ask them what their thoughts are on the questions. The comments about the causation items include: “of course I agree with this statement” and “I would contradict the intent of the incubator program that I’m affiliated with if I do not agree with this”. The author values these remarks to the extent that the strong one-dimensionally observed environment for entrepreneurship in the USA facilitates on this way of thinking about the causation-based approach. The observed one-dimensional environment for entrepreneurship, high perceived cultural tightness, and low variation in cultural tightness ($M = 3.76$, $SD = .791$) aligns with earlier theorizations of Gelfand et al. (2011) who explained that high agreeableness on norms and rules and low

deviance of these norms and rules (i.e. one-dimensionality) indicates tight cultures. On top of that, the significant positive effect of cultural tightness on the use of causation further strengthens the claims of the observed one-dimensionality in the culture which causes the high perceived cultural tightness and high use of causation. Therefore, based on the perception of the American novice entrepreneur, the American entrepreneurship environment seems more suitable for causation-based new venture creation decisions than for effectuation-based new venture creation decisions.

Finally, for years researchers have been emphasizing on a possible culture of entrepreneurship in which they suggested further research on the subject (Mitchell et al., 2002; Thomas & Mueller, 2000). This would imply that culture within entrepreneurship is a universal construct that is the same from all over the world. For the specific case of the USA, the author has monitored on this assumption and observed various nation-wide traits that these entrepreneurs all seemed to possess and an environment in which they operated that has a lot of similarities nation-wide. The author has observed a consistent presence of passion for what they do and an environment in which the entrepreneurs promote risk-taking, emphasize the importance of networking, are easy-talking and support each other heavily in actually doing things instead of endlessly discuss and talk through subjects. On top of that, these observations are backed by the global entrepreneurship monitor who rank the USA third out of fifty-four countries in terms of presence of cultural and social norms that support or inhibit entrepreneurship (GEM, 2018). However, it is remarkable to observe that the USA is currently in an innovation-driven economic development phase in which they rank fifth out of fifty-four surveyed countries in terms of improvement-driven (i.e. innovation) opportunity motivation for starting a business and ninth out of fifty-four based on their innovation impact (GEM, 2018). These numbers are backed by the high mean score on the innovativeness scale ($M = 3.489$, $SD = .403$) out of Likert scale of maximum 5, and the positive effect of cultural tightness on the use of innovativeness. Drawing from these observations, it seems as if the one-dimensional innovation-driven entrepreneurship climate in the USA results in a significant increase in innovativeness of novice entrepreneur. Therefore, these observations give clear expectation that the American entrepreneurship environment is well suited for innovation-driven entrepreneurship to thrive.

For entrepreneurs worldwide. Some of the outcomes of this research and observations during the data collection give practical implications that not only apply to entrepreneurs in the USA but worldwide. Given that innovativeness is theorized to be a universal trait (Mitchell et al., 2002; Mueller & Thomas, 2001), and cultural tightness as a complex, multi-level and multi-layer construct also is universally applicable, these results can be used for cross-national practical implications. Entrepreneurs should consider the tolerance of their culture to deviance from known norms and values. The innovative individual is less conforming to rules, social norms and accepted work patterns (Kirton, 1976). Therefore, when one is highly innovative one should find a loose culture to facilitate the innovativeness of an entrepreneur. This loose culture is generally found in a culturally diverse environment (Gelfand et al., 2011). More specifically, a culture that has a high diversity in the ethnical and geographical background which leads to different sets of values and norms.

5.3. Limitations of the study

Despite these contributions, this study is not without limitations. During this study, the author made some choices with regard to measurement instruments whom could have led to a representation of reality which deviates from the results that alternative measurement instruments would have given. Building on this suggestion, the scale of causation formulated by Alsos et al. (2014) shows some reliability and validity issues. Evidence for this argument lies in the low reliability of the causation scale ($\alpha = .590$), low but still acceptable internal-item correlations of the causation construct (average = .225) which indicates potential lack of internal consistency reliability, and the fact that causation items also load on the dimensions of the cultural tightness and innovativeness scale which indicates validity issues. Thus, one should ask the question if the causation scale was actually measuring the targeted construct hence has sufficient construct validity. On top of that, considering the low reliability of the causation scale one should question the generalizability of the study.

The cultural tightness scale is hampering with comparable reliability and validity issues to the causation scale. These issues are indicated by the low reliability of the cultural tightness scale ($\alpha = .645$), low but acceptable internal-item correlations of the cultural tightness scale (average = .220), and the fact that the item measuring “the freedom in deciding how to act”

loads on a different dimension than the cultural tightness dimension. On top of that, if this item would be deleted the reliability will rise to an acceptable range accounting for the rule of thumb that Hair et al. (2011) proposed ($\alpha = .760$). Besides that, the mean for the perceived culture indicates that the American novice entrepreneurs experience their culture as rather tight ($M = 3.758$, $SD = .791$) given a minimum score of 1 and a maximum score of 6. However, the negatively worded item measuring “the freedom in deciding how to act” within this scale lowers the overall score ($M = 2.50$, $SD = 1.412$). Given that this item seems to load on a different dimension than the other items, it could be plausible that this item is wrongly understood by the American entrepreneurs causing low reliability and questionable generalizability of the results in this study.

This study has some unmeasured variables that may affect the findings. First, the identified partial mediation of innovativeness on the relationship between cultural tightness and causation is an indication for unmeasured variables. Contrary to full mediation, partial mediation suggests that there are other unmeasured variables that influence the measured variable (Rucker, Preacher, Tormala, & Petty, 2011). Second, following the rule of thumb that Hair et al. (2011) has given, results show that the concepts of innovativeness, cultural tightness and the identified control variables weakly explain effectuation ($R^2 = .146$) and moderately explain causation ($R^2 = .303$). This could indicate that there are some specific unmeasured variables that influence the results on the effectuation and causation concept. Building on this, it has been earlier explained that there seems to be a positive correlation between the use of effectuation and the level of uncertainty whilst causation has a negative correlation with the level of uncertainty (Alsos et al., 2014). Due to the complexity of measuring the uncertainty concept, this study failed in controlling for uncertainty level. Therefore, it is not clear what the effect of diversity in uncertainty is on the results of this paper.

5.4. Directions for further research

Based on the formulated theoretical contributions, practical implications and limitations of the study, we suggest various avenues for future research. First, several researchers argue that effectuation and causation can also be an intertwining construct in which both effectuation and causation can occur simultaneously in the process of new venture creation

(Sarasvathy, 2001; Venkataraman & Sarasvathy, 2001). Following this logic, one can argue that the measurement of effectuation and causation as different strategies based on the measurement scale of Alsos et al. (2014) is not a good representation of reality. However, as Alsos et al. explained that the preceding measurement scales, who use the conceptualizations that are suggested by Sarasvathy (2001) and Venkataraman and Sarasvathy (2001), are hampering with important validity problems. However, the current study also does not give aid to the suggested need for a reliable and valid scale for testing effectuation and causation. While the effectuation scale shows acceptable reliability numbers ($\alpha = .722$), the causation scale ($\alpha = .580$) does not comply with the suggested rule of thumb by Hair et al. (2011). Thus, we suggest further research on the conceptualization of effectuation and causation as different strategies and as an intertwining and simultaneous occurring construct to learn and improve on these reliability and validity issues. To achieve this, further empirical testing of both scales is necessary.

Second, adding to the discrepancy in the literature about the influence of culture on the use of effectuation (e.g., Laskovaia et al., 2017; Sarasvathy et al., 2014; Sarasvathy et al., 2008; Stienstra et al., 2012) we found no effect of cultural tightness on effectuation. However, due to the reliability issues of the cultural tightness and causation scale, the generalization of the results to the entire population is questionable. Furthermore, the low reliability of cultural tightness seems to be based on a wrongly understood reserved question. On top of that, we expect that looser cultures than the American culture show a less stringent tendency to the use of causation. Therefore, we suggest that scholars do further intra-national and cross-national testing in other cultures on the influence of cultural tightness on both effectuation and causation in order to create clarity to the discussion of cultural tightness as an antecedent variable of both effectuation and causation.

Third, the results on the influence of innovativeness on the effectuation and causation-based new venture creation decision shows promise for the development of established differences in antecedent variables between effectuation and causation. However, the influence of cultural tightness should not be overlooked. This statement is endorsed by the findings that the American entrepreneurship environment seems more suitable for causation-based new venture creation decisions compared to the effectuation-based

new venture creation decision. On top of that, we find a positive effect of cultural tightness on innovativeness while we theorized the opposite. This remarkable result is explained by the observed one-dimensional entrepreneurship culture in the USA that favors innovation-driven entrepreneurship. On top of that, there is an ongoing discussion in the literature about the influence of culture on innovativeness following the theorized cross-cultural universality of innovativeness by Mueller and Thomas (2001), and scholars suggest a need for a comparison group related to effectuation (Arend et al., 2015). Following this, current entrepreneurship theory seems to be at the crossroad with regard to effectuation and causation-based new venture creation decisions, innovativeness and the influence of culture. In this light, it would be useful to do further cross-national testing of the antecedent variables that innovativeness and cultural tightness potentially are in the causation-based decision-making process and as a result, could give more robustness to the identified distinction in antecedent variables compared to the effectuation-based new venture creation decision.

Fourth, current measured variables do not seem to explain the whole complexity of the phenomenon of the new venture creation decision which gives rise to doing additional research on other latent variables that play a role in the effectuation and causation theory. Based on the current state of literature, we identify a set of variables that are potential influencing variables. First, we advise further research on the expected positive effect of uncertainty on the use of effectuation and the negative effect of uncertainty on causation (Fisher, 2012; Sarasvathy, 2009). On top of that, we recommend scholars to do future research on the theorized positive effect of experience on the use of effectuation and the negative effect of experience on the use of causation (Dew et al., 2009; Sarasvathy, 2001, 2009). Due to the identified lack of antecedent variables (Arend et al., 2015), we also suggest some additional avenues for future research. However, we do not specify about the type, direction or strength of influence they have on the effectuation and causation-based new venture creation decision. We suggest that further research can be done on the influence of entrepreneurial passion (Cardon, Zietsma, Saporito, & Davis, 2005), formal institutions (Hayton et al., 2002), thinking style (Grégoire et al., 2011), entrepreneurial cognitions and culture of entrepreneurship (Mitchell et al., 2002). Overall, this can bring a deeper understanding of the antecedent values that

effectuation entails and the differences that it has with causation-based new venture creation decision.

Finally, with regard to choices for measurement instruments, in this study innovativeness is measured as a personality construct whereas other studies give preference to measuring innovation as an outcome. However, both approaches to measuring innovation assume that innovation causes firms to be durable, flexible and therefore increase a firm's performance (Hurley & Hult, 1998; Porter, 1990). Following the study by Roach, Ryman, and Makani (2016), it is interesting to measure the increased performance that innovation and the distinction between effectuation and causation could cause. Moreover, performance is of growing importance in an increasingly competitive global entrepreneurship environment (GEM, 2018). Thus, further studies could also include firm performance as a variable in studies that measure the effect of innovativeness on effectuation compared to causation.

6. Conclusion

In conclusion, the present study assessed the influence of cultural tightness and innovativeness on the use of both effectuation and causation in a new venture creation decision of novice entrepreneurs. While we find that novice entrepreneurs use causation significantly more than effectuation, we also find that innovativeness and cultural tightness poorly predict effectuation and moderately predict causation. Also, when entrepreneurs perceive their culture as tight, the positive effect on the use of causation is partially explained by innovativeness. However, when entrepreneurs perceive themselves as innovative, the positive effect on the use of causation is fully explained by cultural tightness.

These findings suggest that is impossible to capture the whole complexity of the effectuation and causation-based new venture creation decision while accounting for the identified control variables, innovativeness and cultural tightness of a novice entrepreneur. While this study adds to the existing literature by providing empirical evidence on differences between effectuation and causations as a comparison group, we should also be careful in generalizing the results of the study. Therefore, we propose that future research begins to refocus on the following three aspects: develop a reliable and valid measurement scale for effectuation and causation, identify and empirically

test unmeasured variable, and conduct cross-national research on the influence of cultural tightness and innovativeness on both effectuation and causation. In sum, the findings of this study underline the importance of cultural tightness and innovativeness for the causation-based new venture creation decision, the contrast that these antecedent variables have towards effectuation, and the need for further empirical testing of measured and unmeasured antecedent variables of effectuation and causation.

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Appendices

Appendix 1: Grouping of states of the USA under geographical regions

Northeast region	Midwest region	South region	West region
Connecticut	Illinois	Delaware	Arizona
Maine	Indiana	Florida	Colorado
Massachusetts	Michigan	Georgia	Idaho
New Hampshire	Ohio	Maryland	Montana
Rhode Island	Wisconsin	North Carolina	Nevada
Vermont	Iowa	Virginia	New Mexico
New Jersey	Kansas	District of Columbia	Utah
New Jersey	Minnesota	West Virginia	Wyoming
Pennsylvania	Missouri	Alabama	Alaska,
	Nebraska	Kentucky	California
	North Dakota	Mississippi	Hawaii
	South Dakota	Tennessee	Oregon
		Arkansas	Washington
		Louisiana	
		Oklahoma	
		Texas	

Appendix 2: STEM vs NON_STEM educational background

STEM disciplines	Non-STEM disciplines
Life science	Teacher training and education science
Physical sciences	Arts
Mathematics and statistics	Humanities
Computing	Social and behavioral sciences
Engineering and engineering trades	Journalism and information
Manufacturing and processing	Business and administration
Architecture and building	Law
Agriculture, forestry and fishery	Social services
Veterinary	Personal services
Health if biochemical/biomedical	Transport services
	Environmental protection
	Security services
	Health except biochemical/biomedical

Appendix 3: Gelfand's cultural tightness scale

Cultural tightness measurement scale
1. There are many social norms that people are supposed to abide by in this country.
2. In this country, there are very clear expectations for how people should act in most situations.
3. People agree upon what behaviors are appropriate versus inappropriate in most situations this country.
4. People in this country have a great deal of freedom in deciding how they want to behave in most situations. (Reverse coded)
5. In this country, if someone acts in an inappropriate way, others will strongly disapprove.
6. People in this country almost always comply with social norms.

Appendix 4: JPI scale

Scale for innovativeness

1. I often surprise people with my novel ideas.
 2. People often ask me for help in creative activities.
 3. I obtain more satisfaction from mastering a skill than coming up with a new idea. (Reversed question)
 4. I prefer work that requires original thinking.
 5. I usually continue doing a new job in exactly the way it was taught to me. (Reversed question)
 6. I like a job which demands skill and practice rather than inventiveness. (Reversed question)
 7. I am not a very creative person. (Reversed question)
 8. I like to experiment with various ways of doing the same thing
-

Appendix 5: Factor analysis

Cultural tightness - item correlations						
	Cul1	Cul2	Cul3	Cul4Reversed	Cul5	Cul6
Cul1	1					
Cul2	,515**	1				
Cul3	,258**	,507**	1			
Cul4Reversed	0,085	-0,098	-0,03	1		
Cul5	,360**	,321**	,332**	-0,151	1	
Cul6	,377**	,476**	,557**	-0,027	0,171	1

* $P < .05$, ** $P < .01$

Innovativeness - item correlations								
	INN1	INN2	INN3Reversed	INN4	INN5Reversed	INN6Reversed	INN7Reversed	INN8
INN1	1							
INN2	,490**	1						
INN3Reversed	,218*	0,112	1					
INN4	,307**	,224*	0,173	1				
INN5Reversed	-0,032	-0,014	,232*	0,118	1			
INN6Reversed	,216*	0,105	,474**	,257**	0,177	1		
INN7Reversed	,403**	,445**	,273**	,291**	0,019	,269**	1	
INN8	,287**	0,136	0,102	,357**	0,173	0,011	,241*	1

* $P < .05$, ** $P < .01$

Causation - item correlations					
	CA1	CA2	CA3	CA4	CA5
CA1	1				
CA2	,278**	1			
CA3	0,171	,356**	1		
CA4	0,101	,257**	0,023	1	
CA5	,371**	,300**	0,01	,383**	1

* $P < .05$, ** $P < .01$

Effectuation - item correlations					
	EF1	EF2	EF3	EF4	EF5
EF1	1				
EF2	,518**	1			
EF3	,370**	,219*	1		
EF4	,212*	,355**	,314**	1	
EF5	,445**	0,182	,470**	,325**	1

* $P < .05$, ** $P < .01$

Mean inter-item correlations per scale	
Cultural tightness	.220
Innovativeness	.217
Effectuation	.341
Causation	.225

KMO and Bartlett's Test

		Overall	Innovative- ness	Cultural tightness	Causation	Effectua- tion
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.669	.696	.671	.598	.646
Bartlett's Test of Sphericity	Approx. Chi-Square	723.873	150.241	146.627	66.795	115.065
	df	276	28	15	10	10
	Sig.	.000	.000	.000	.000	.000

Dimension extraction based on Eigenvalues

	Total		Innovativeness		Cultural tightness		Causation		Effectuation	
	Total	Cumulative %	Total	Cumulative %	Total	Cumulative %	Total	Cumulative %	Total	Cumulative %
1	3.673	15.303	2.612	32.655	2.580	42.995	1.941	38.814	2.374	47.47
2	2.880	27.304	1.358	49.632	1.073	60.872	1.135	22.692		
3	2.592	38.101	1.103	63.423						
4	1.666	45.043								
5	1.451	51.090								
6	1.430	57.048								
7	1.109	61.668								

Rotated Component Matrix^a

	Component			
	Innovativeness	Cultural tightness	Effectuation	Causation
Cul1		.714		
Cul2		.781		
Cul3		.683		
Cul4Reversed				
Cul5		.550		
Cul6		.697		
INN1	.682			
INN2	.611			
INN3Reversed	.387			-.478
INN4	.593			
INN5Reversed				-.614
INN6Reversed	.498			
INN7Reversed	.684			
INN8	.431			
CA1	.342		-.424	.455
CA2		.490		
CA3				.578

CA4	.572	
CA5	.560	
EF1		.766
EF2		.644
EF3		.660
EF4		.568
EF5		.690

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 6 iterations.

Appendix 6: Parallel analysis

PARALLEL ANALYSIS:

Principal Components & Random Normal Data Generation

Specifications for this Run:

Ncases 109
 Nvars 24
 Ndatsets 1000
 Percent 95

Raw Data Eigenvalues, & Mean & Percentile Random Data Eigenvalues

	Root	Raw Data	Means	Prcntyle
	1,000000	3,672811	1,972230	2,141031
	2,000000	2,880041	1,802289	1,930862
	3,000000	2,591501	1,674113	1,777494
	4,000000	1,665912	1,567982	1,658180
	5,000000	1,451307	1,469966	1,544030
	6,000000	1,430013	1,382294	1,452425
	7,000000	1,108725	1,301939	1,364875
	8,000000	,948869	1,227005	1,288278
	9,000000	,905110	1,156961	1,214091
	10,000000	,842908	1,089317	1,148006
	11,000000	,740205	1,024713	1,081672
	12,000000	,693555	,963213	1,013831
	13,000000	,663193	,904886	,959343
	14,000000	,612221	,846348	,899730
	15,000000	,531254	,792174	,841351
	16,000000	,502326	,739406	,787224
	17,000000	,465669	,685606	,733695
	18,000000	,440069	,635619	,683231
	19,000000	,401357	,586220	,635140
	20,000000	,361845	,537354	,585937
	21,000000	,320559	,488431	,536316
	22,000000	,278673	,438724	,483780
	23,000000	,266151	,386617	,434730
	24,000000	,225724	,326595	,380287

----- END MATRIX -----

Appendix 7: Item-scale reliability

Reliability statistics			
	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Cultural tightness	.648	.659	6
Innovativeness	.686	.689	8
Effectuation	.722	.721	5
Causation	.590	.592	5

Item total statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
<u>Cultural tightness</u>					
Cul1	18.468	15.700	.528	.371	.550
Cul2	18.4954	14.863	.569	.446	.529
Cul3	18.6422	15.287	.535	.431	.544
Cul4Reversed	20.0550	21.367	-.064	.068	.760
Cul5	18.4220	17.413	.316	.233	.627
Cul6	18.9908	15.843	.510	.396	.557
<u>Innovativeness</u>					
INN1	27.0183	13.314	.480	.354	.631
INN2	26.9817	13.814	.366	.322	.658
INN3Reversed	27.7798	13.303	.398	.279	.651
INN4	26.7064	14.098	.431	.232	.645
INN5Reversed	27.1009	15.388	.162	.109	.704
INN6Reversed	27.4587	13.899	.384	.296	.654
INN7Reversed	26.6606	13.449	.499	.318	.628
INN8	26.9725	14.546	.313	.219	.670
<u>Effectuation</u>					
EF1	16.22	20.377	.555	.418	.643
EF2	15.63	23.975	.451	.347	.686
EF3	15.17	23.793	.489	.278	.673
EF4	16.06	24.061	.409	.227	.702
EF5	16.76	21.683	.506	.345	.664
<u>Causation</u>					
CA1	19.83	13.590	.361	.185	.530
CA2	20.24	10.980	.489	.252	.446
CA3	21.62	13.626	.218	.150	.610
CA4	19.72	14.183	.289	.175	.564
CA5	20.39	12.591	.399	.285	.507

Appendix 8: Assumption testing for correlation, regression and SEM analysis

Assumption #1 – Continuous or categorical level independent variable

Ensured via “transform variables” and “create dummy variables” in SPSS

Assumption #2 – continuous level dependent variable independence of observations

Ensured via “transform variables” and “create dummy variables” in SPSS

Assumption #3 – Independence of observation

Criterion: The Durbin-Watson statistics should be between 1.5 and 2.5 for independent observations (Garson, 2012).

Predictor variable:	Durbin-Watson statistic			
	Dependent variable:	Innovativeness	Effectuation	Causation
Cultural Tightness		1.872	1.727	2.147
Innovativeness			1.739	1.985
Moderator effect			1.754	2.146
Mediator effect			1.739	2.150

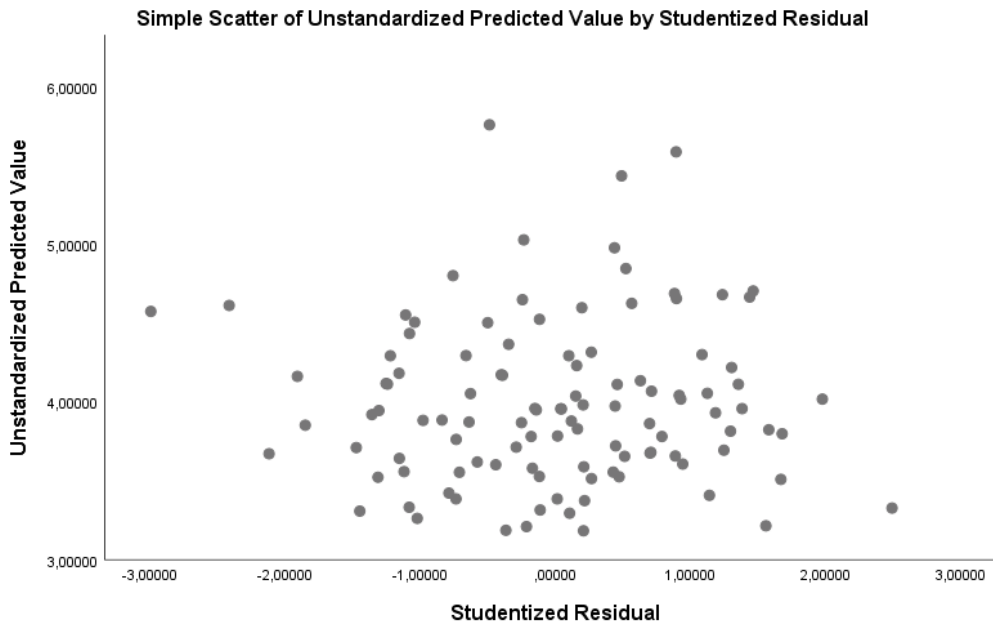
Note. Control variables always included in the model

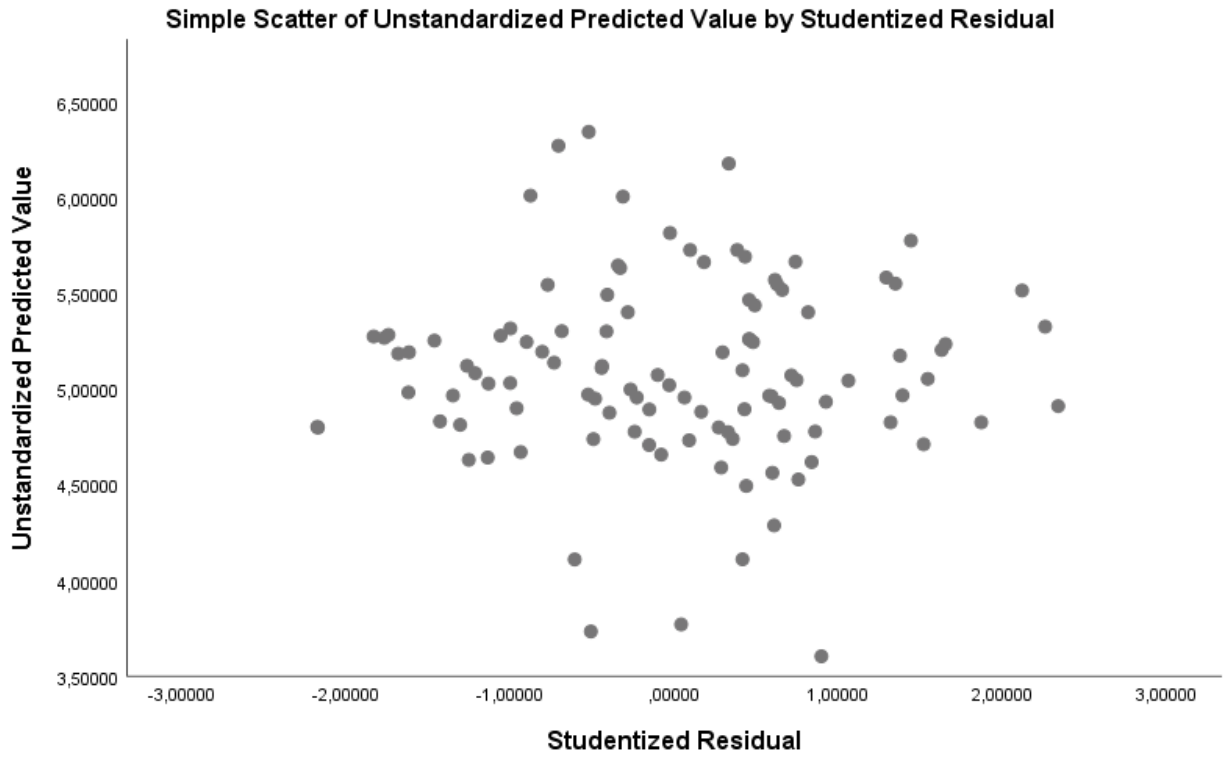
Assumption #4 – Linearity of data

Criteria:

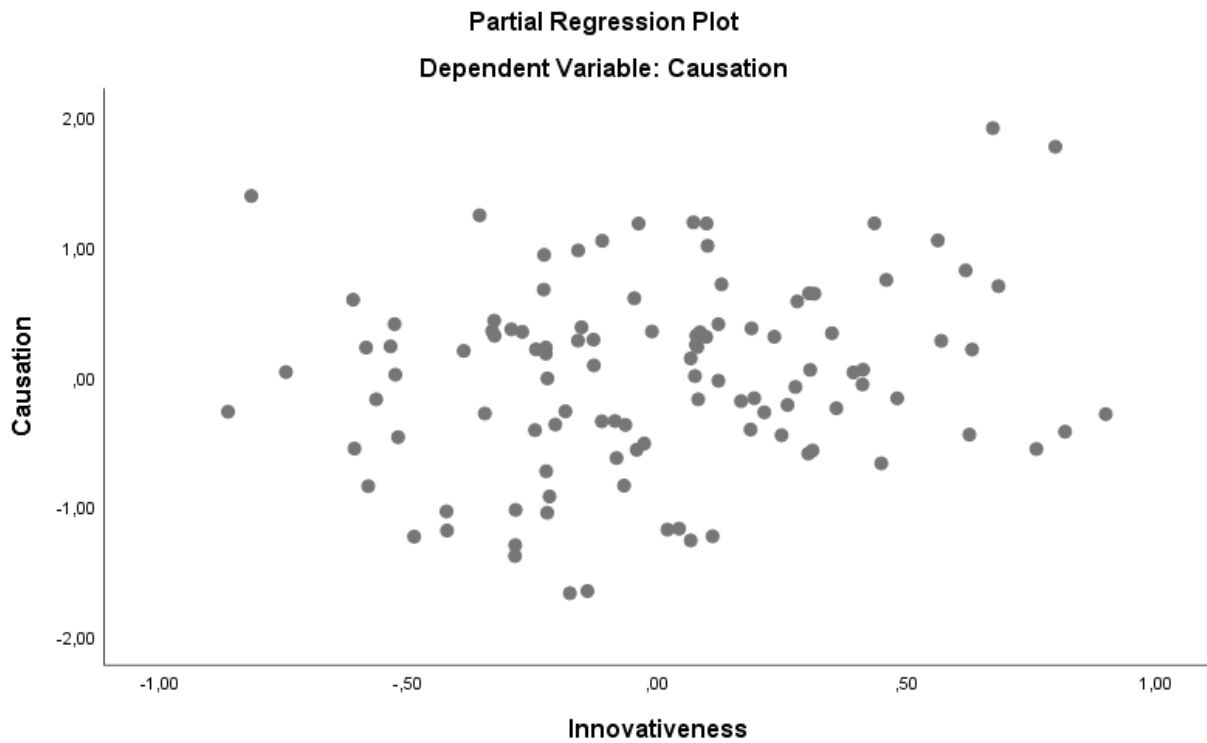
1. Establish if a linear relationship exists between the dependent and independent variables **collectively**
2. Establish if a linear relationship exists between the dependent variable and **each** of your independent variables

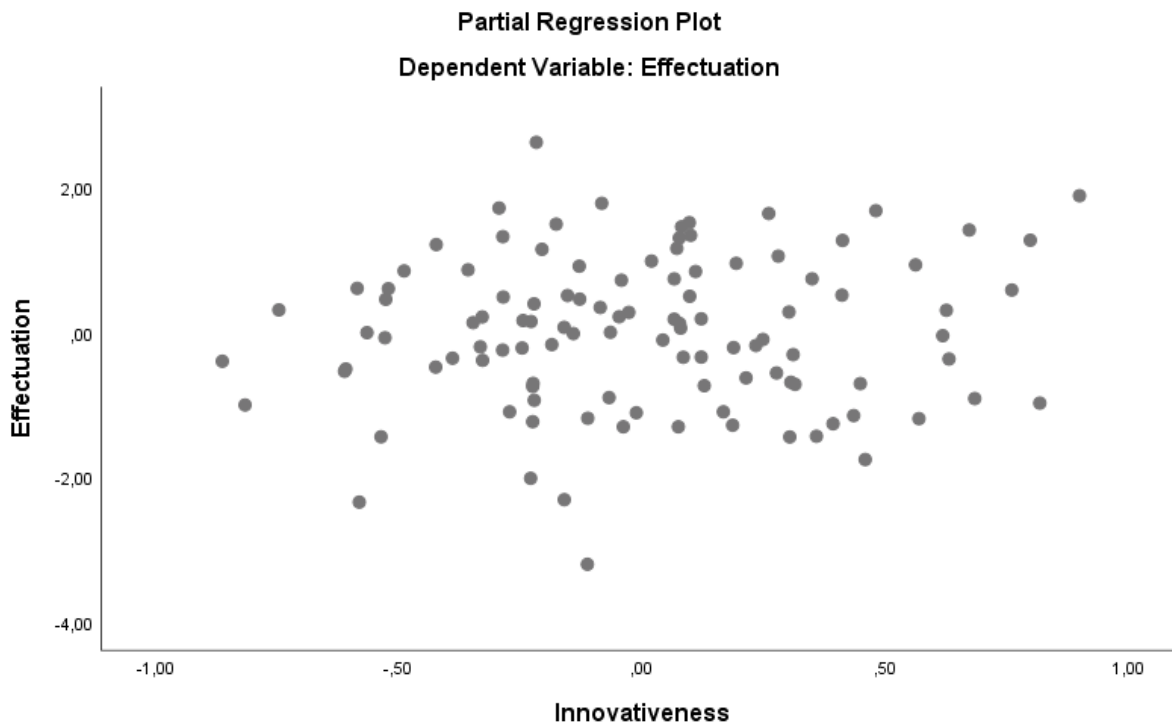
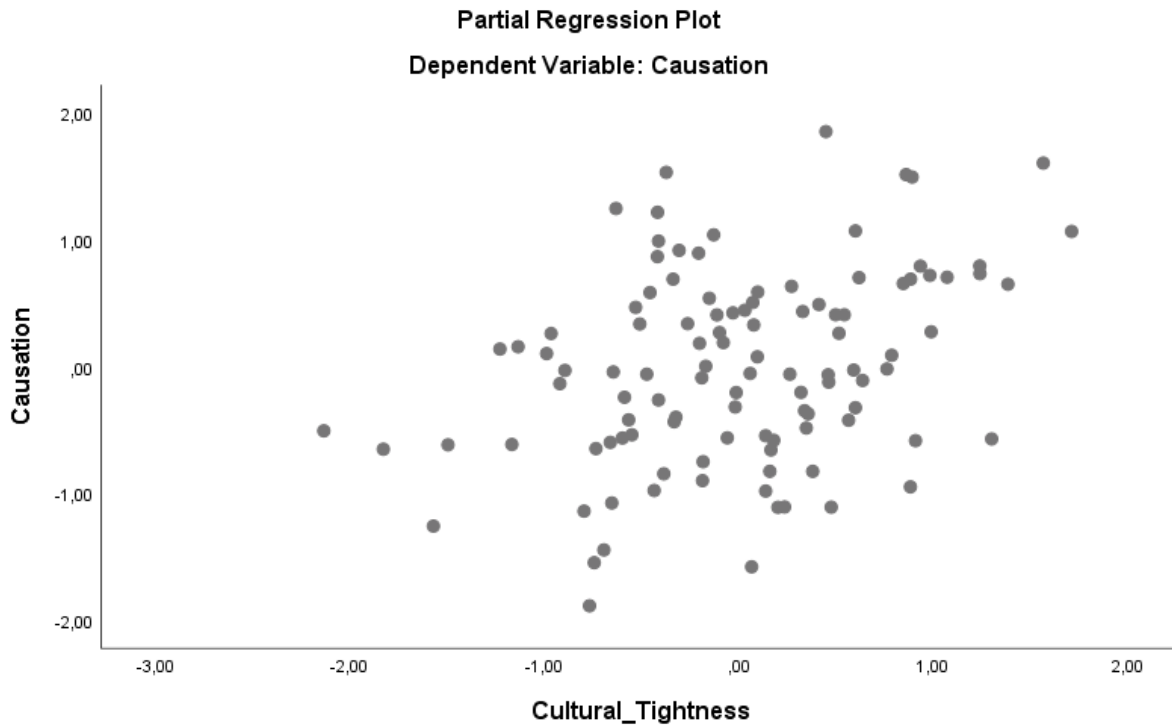
Criterion 1: linear relationship dependent and independent variables collectively

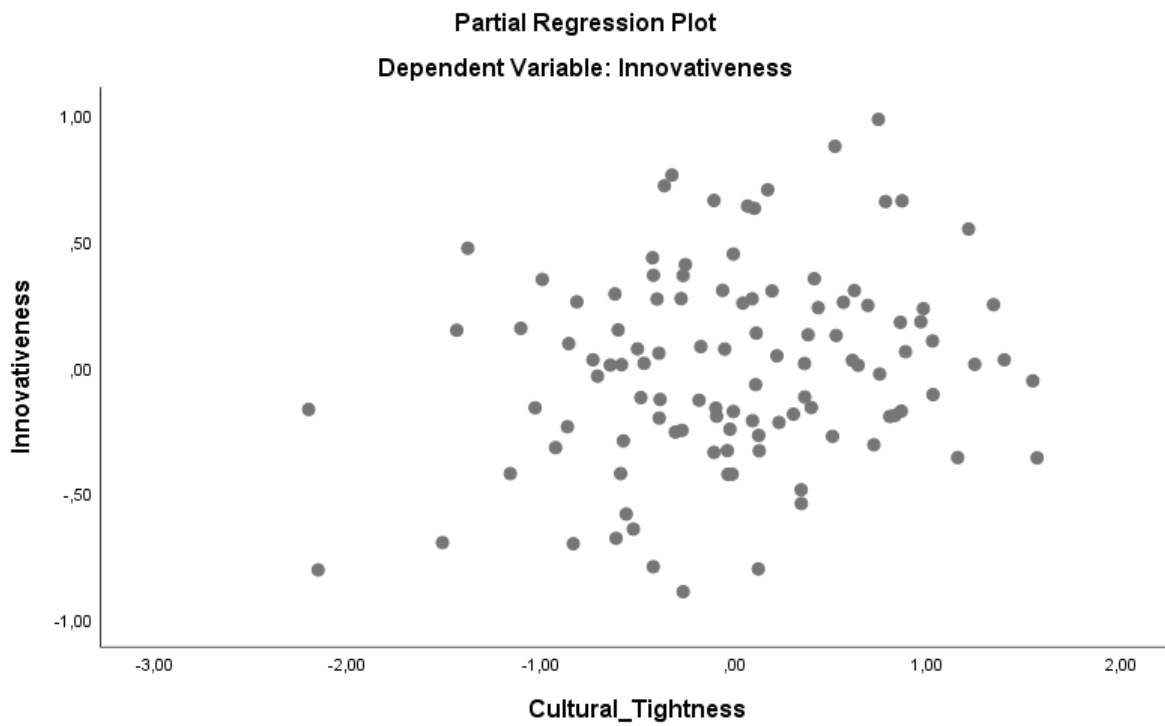
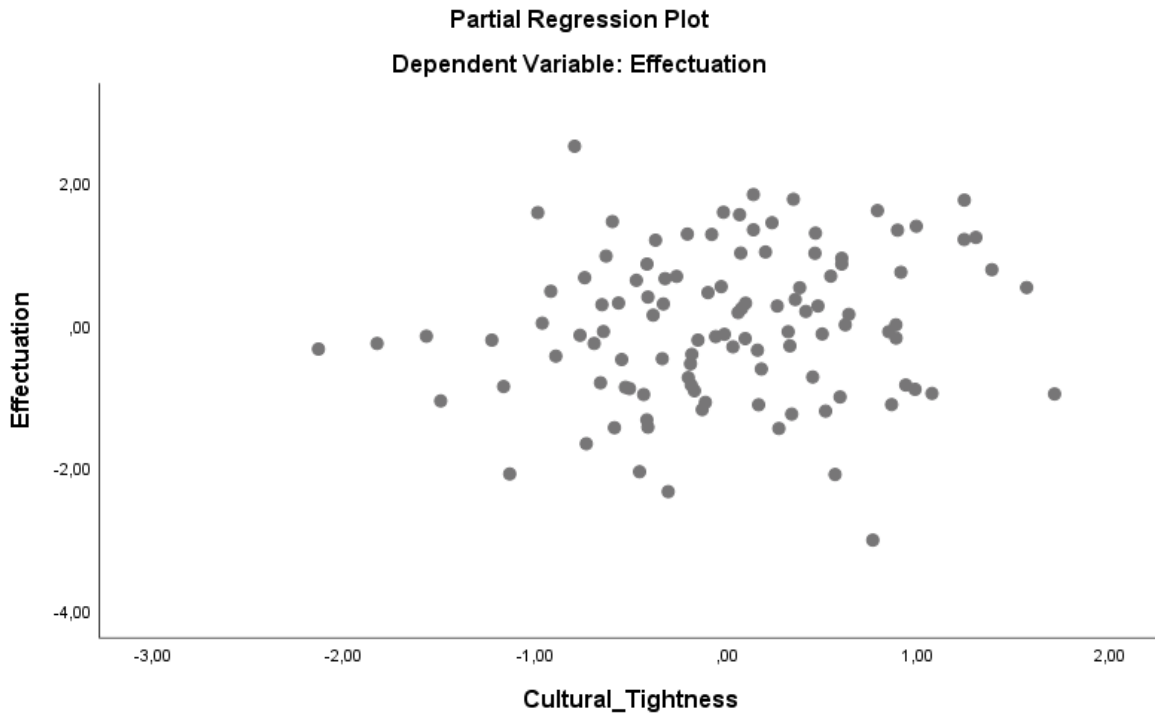


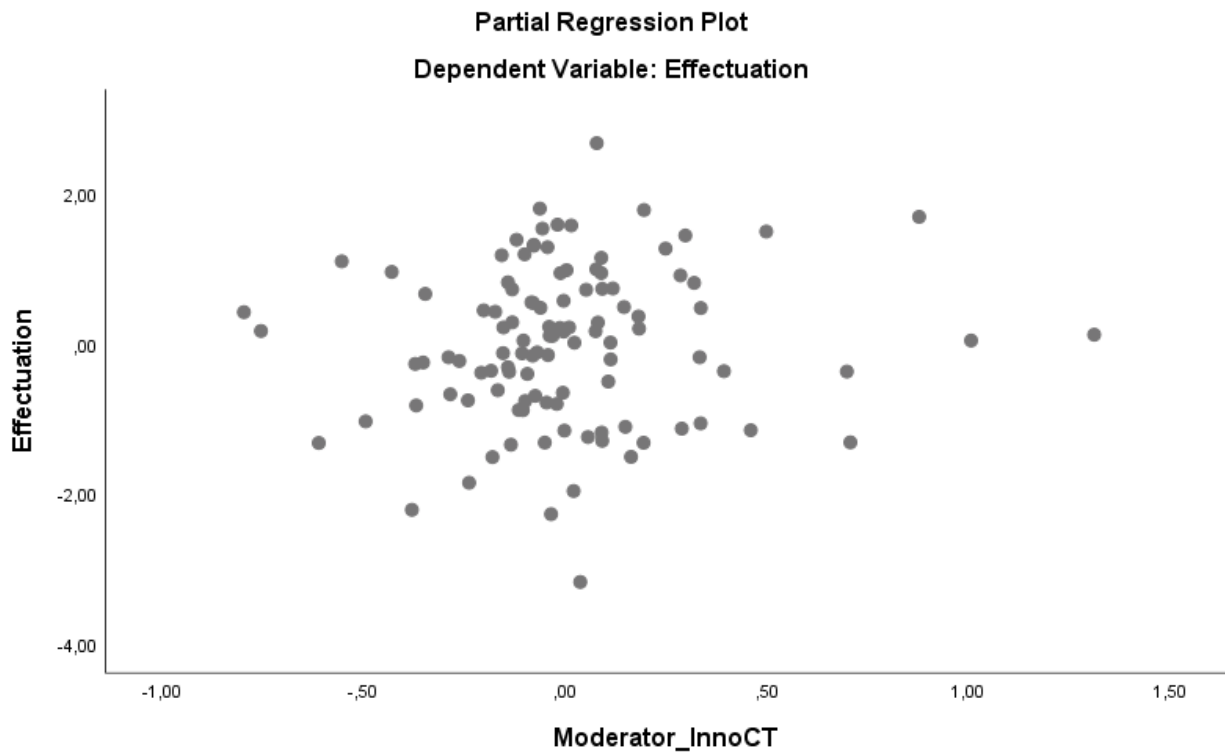
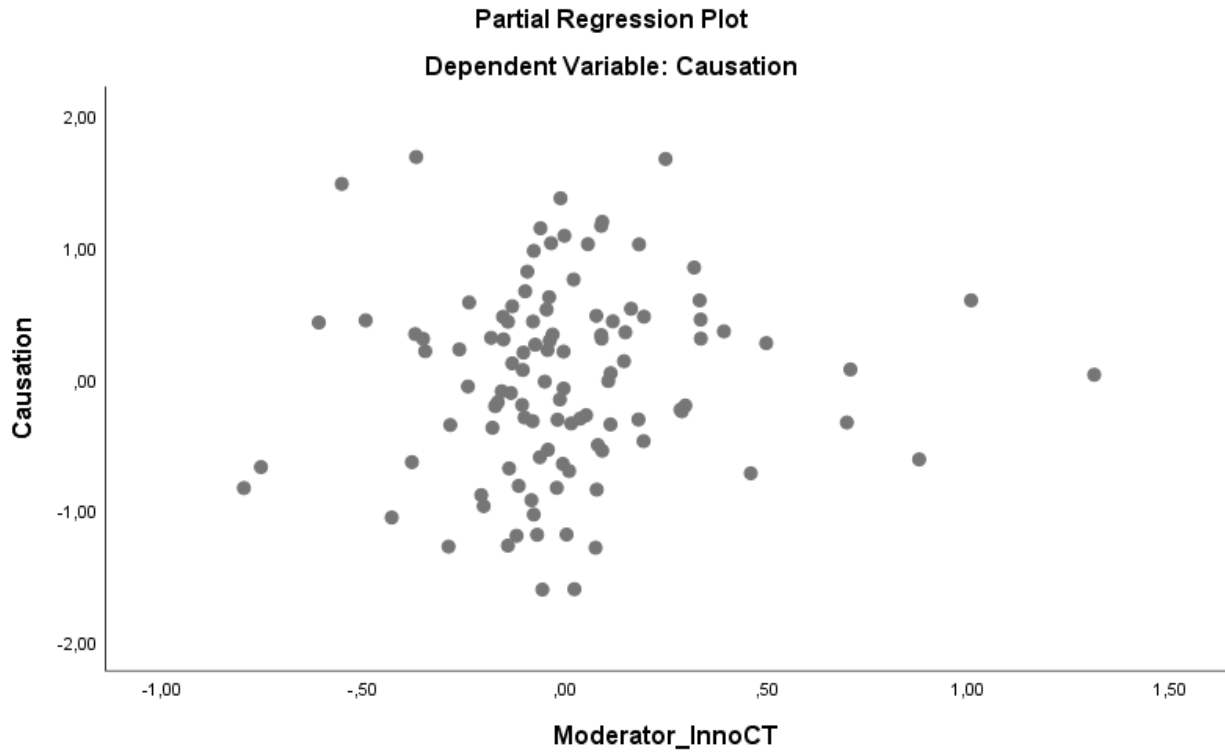


Criterion 2: Linearity between dependent variables and each independent variable:









Assumption #5 – Homoscedasticity of residuals

Criterion: A plot of studentized residuals against the unstandardized predicted values show a spread that does not increase or decrease as it moves across the predicted values (see assumption #2. – Linearity of data).

Assumption #6 – No multicollinearity in the data

Criterion: VIF should not be greater than five

		Collinearity Statistics			
		Effectuation ^a		Causation ^b	
Model		Tolerance	VIF	Tolerance	VIF
1	GenderMetric	.830	1.205	.830	1.205
	Age	.529	1.891	.529	1.891
	EducationLevelCompletedMetric	.505	1.979	.505	1.979
	STEMvs.NON_STEM	.671	1.490	.671	1.490
	PrimaryobjectiveMetric=Profit and growth	.429	2.330	.429	2.330
	PrimaryobjectiveMetric=To sustain myself (and family)	.484	2.068	.484	2.068
	PrimaryobjectiveMetric=Other	.628	1.593	.628	1.593
	Serviceorientedindustry=Primary and Secondary industry	.642	1.558	.642	1.558
	Serviceorientedindustry=N/A	.754	1.326	.754	1.326
	Regionsofamerica=Northeast	.871	1.148	.871	1.148
	Regionsofamerica=Midwest	.946	1.057	.946	1.057
	Regionsofamerica=West	.841	1.189	.841	1.189
	Innovativeness	.852	1.173	.852	1.173
	Cultural_Tightness	.798	1.253	.798	1.253
	Moderator_InnoCT	.813	1.230	.813	1.230

a. Dependent Variable: Effectuation

b. Dependent Variable: Causation

Assumption #7 – No outliers in the data

Criterion on identifying outliers: Using the multiplier of 2,2 (Hoaglin & Iglewicz, 1987) the lowest scoring items should not be lower than the calculated lower bound and the highest scoring items should not exceed the upper bound. If not, then the sample is free of outliers.

Criterion on missing values: No missing values (N missing = 0).

		Innovativeness	Cultural tightness	Causation	Effectuation
N	Valid	109	109	109	109
	Missing	0	0	0	0
Q1		3.25	3.25	4.60	3.10
Q3		3.75	4.15	5.80	4.80
G		2.20	2.20	2.20	2.20
Q3 -/- Q1		.50	.92	1.20	1.70
g'		1.10	2.02	2.64	3.74
Lower bound		2.15	1.23	1.96	-.64
Lowest score		2.5	1.33	3.20	1.40
<u>Criteria:</u> Outlier if positive		-.35	-.10	-1.24	2.04
Lower bound		4.85	6.18	8.44	8.54
Lowest score		4.50	5.67	7.00	6.40
<u>Criteria:</u> outlier if negative:		.35	.51	1.44	2.14
# of outliers		0	0	0	0

Assumption #8 – Normally distributed data

Criterion: no significant outcome on the Shapiro-Wilk test, a skewness between -1 and 1, and a kurtosis between -1 and 1 to ensure normality in the data.

	Shapiro-Wilk			Skewness		Kurtosis	
	Statistic	df	Sig.	Statistic	Std. Error	Statistic	Std. Error
Causation	.983	109	.178	-.370	.231	.539	.459
Effectuation	.985	109	.271	-.057	.231	.026	.459
Innovativeness	.985	109	.255	.020	.231	-.624	.459
Cultural_Tightness	.982	109	.144	-.048	.231	-.677	.459